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Urinalysis and Urine Culture Results of Free-Catch Samples in Dogs

Urine analysis is a very common and important test performed on a daily basis in a small animal general practice setting. Among other uses, urine analysis is used to evaluate kidney function, monitor diabetic patients, assess protein loss, and is the primary diagnostic tool used to evaluate for bacterial urinary tract infection in dogs presenting with urinary signs. Because urine analysis is an important tool in diagnosing and treating many disease processes, it is considered part of a minimum data base of labwork recommended for both sick patients and patients presenting for annual wellness evaluation.

Urine can be collected from canine patients in 3 ways: Cystocentesis, transurethral catheterization, and free-catch collection. Cystocentesis is considered the 'gold standard' collection method for patients presenting with urinary signs, as it is considered the least likely method to result in sample contamination from the bacteria on preputial or peri-vulvar skin and fur. Cystocentesis typically requires the patient to be placed in dorsal recumbency. The bladder is located using manual palpation or ultrasonography, or if neither is possible, then using standard landmarks. A 22 gauge needle is inserted through the body wall and into the bladder, and urine is aspirated into a syringe. Sedation may be required to appropriately position and obtain the sample. Potential complications include bladder laceration or rupture, uroabdomen, and peritonitis from colonic perforation. Spinal/orthopedic pain from positioning can also occur. Catheterization involves induction of a urethral catheter through the urethra to the entrance of the bladder. This method is not used as often, as it requires more skill, is less tolerated by patients without sedation, and carries the risk of catheter-induced infection. The sample may be contaminated with red and transitional cells resulting from the mild trauma associated with catheter placement. In contrast, free-catch collection is performed by catching a mid-stream urine sample when the patient urinates naturally. This method is therefore the least invasive and carries very minimal risks to the patient. However, there is potential for sample contamination if clean-catch protocols are not followed. If it can be determined that bacterial contamination occurs infrequently with appropriate free-catch collection methods, this low-risk method may be considered a more acceptable option for urine collection in dogs than more invasive procedures.

The goal of this two-arm randomized controlled trial is to compare bacterial contamination frequency of free-catch samples preceded by either a standardized 'clean-catch' protocol vs. unprepped voiding. We will collect urine samples from dogs presenting to the University of Florida Primary Care and Dentistry service for wellness appointments, sick-patient evaluations (including those with urinary signs), and dental evaluation appointments. Half of subjects will be randomly assigned to the 'clean catch' group and will have the preputial or peri-vulvar area cleaned with an antiseptic solution prior to collection. The other half will not have preliminary cleansing prior to voiding. A urinalysis and urine culture will be performed on all samples. The primary outcome is presence/absence of contamination defined as $>10^4$ DFU/mL mixed flora, as identified by the veterinary clinical laboratory. Free-catch samples that are positive for hematuria, bacteruria, or pyuria will require return of the patient for cystocentesis to check for contamination or presence of a urinary tract infection. have the preputial or peri-vulvar area cleaned with an antiseptic solution prior to collection.

The student assigned to our project will be responsible for communication with owners prior to their

visit, obtaining study consent, and collection and submission of all samples. The student will then evaluate samples and communicate with the owner. At the completion of the study, the student will summarize all data and present research results (poster format) and a manuscript.