ANTIBIOTIC USE GUIDELINES FOR URINARY TRACT AND RESPIRATORY DISEASE

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The International Society for Companion Animal Infectious Diseases (ISCAID) Antimicrobial Guidelines Working Group was formed to develop guidelines for antimicrobial drug use in dogs and cats, because of concerns that antimicrobial drug resistance has dramatically increased in prevalence among isolates from dogs and cats in the last decade. The guidelines are to be published in open access format so that they are widely available. The members of the ISCAID Working Group are Scott Weese, Joseph Blondeau, Dawn Boothe, Edward Breitschwerdt, Luca Guardabassi, Andrew Hillier, Michael Lappin, David Lloyd, Mark Papich, Shelley Rankin, Jane Sykes, and John Turnidge. Input has also been obtained from panels of Diplomates of relevant specialty groups. It should be noted that members of the working group receive support from a variety of industry groups that provide funding for honoraria and research (listed at www.iscaid.org). The guidelines development process has been in-part sponsored by an unconditional grant from Bayer Animal Health.

Guidelines for treatment of urinary tract disease in dogs and cats and superficial pyoderma have been published (www.iscaid.org). Guidelines for treatment of respiratory disease and bloodstream infections, and an update on the urinary tract disease guidelines are in preparation. During the course of guideline development, it became clear that there is a significant lack of objective, published information. Accordingly, recommendations are based on available data, whenever present, along with expert opinion, considering principles of infectious diseases, antimicrobial treatment, antimicrobial resistance, pharmacology, and internal medicine. Funding for studies on antimicrobial resistance in companion animals is badly needed. Clinical trials that evaluate antimicrobial drug regimes for bacterial infections in dogs and cats are encouraged.

Because of the increased prevalence of antimicrobial drug resistance, the need to properly document the presence of an infection before initiating antimicrobial drug treatment is more important than ever. In veterinary medicine, this may be at odds with client financial resources. However, inappropriate use of antimicrobial drugs is wasteful of client resources when an infection is not present or a multidrug resistant pathogen is present, and risks selection for antimicrobial resistant bacteria that may be harmful to the pet, other animals, and also humans that are in contact with the animal. Clinicians should choose

laboratories for culture and susceptibility (C&S) testing that follow protocols and use breakpoints published by the Clinical and Laboratory Standards Institute (CLSI), EUCAST or other internationally recognized institutions. The Working Group hopes that veterinarians will re-think the empiric use of antimicrobial drugs, especially when the underlying condition is not immediately life-threatening. An emphasis on rational antimicrobial treatment needs to be made to pet owners, as has been made in human medicine. The guidelines do not provide specific recommendations for hygiene and disinfection, but posters describing appropriate measures and guideline documents are available from veterinary associations in North America and in Europe and these should be followed.

Some of the basic recommendations within the urinary and respiratory guidelines are summarized below. Doses of specific antimicrobial drugs are listed in the guidelines themselves.[1,2]

RECOMMENDATIONS FOR URINARY TRACT DISEASE

Sporadic Cystitis [Simple Uncomplicated Urinary Tract Infection (UTI)]

Definition: Sporadic bacterial infection of the bladder in an otherwise healthy individual with normal urinary tract anatomy and function.

- The presence of urinary tract infection implies the presence of dysuria, pollakiuria, and/or stranguria. However, diagnosis of UTI cannot be made on the basis of clinical signs alone.
- Sediment analysis alone is not adequate for diagnosis because of the variable quality of interpretation.
- Complete urinalysis and quantitative aerobic C&S testing should be performed for all cases. Free-catch samples should not be used.
- For cystocentesis specimens, counts ≥ 10^3 CFU/mL indicate UTI. For catheterized specimens, counts ≥ 10^4 in males and ≥ 10^5 CFU/mL in females are significant.
- Bacterial isolation should only be attempted in clinics with appropriate laboratory facilities, proper biosafety containment and waste management, and adequately trained individuals. A recent study showed that in-house “urine paddles” may be useful to rule out the presence of infection but these do not reliably identify bacteria and can generate false negative results.[3]
- Treatment is indicated to relieve patient discomfort while awaiting C&S test results. Recommendations for initial treatment are amoxicillin (11 – 15 mg/kg PO q12h) or trimethoprim-sulfonamide (15 mg/kg PO q12h).
- Veterinarians are encouraged to document and monitor resistance patterns among isolates from their hospital.

- If C&S testing reveals a resistant isolate and there is a lack of clinical response, treatment should be changed to an appropriate antimicrobial drug.
- Although treatment has been recommended in the past for 7 to 14 days, recent research suggests 3-5 days may be more appropriate.[4,5]
- There is no evidence that intra- or post-treatment urinalysis or urine culture is indicated in the absence of ongoing clinical signs of UTI.

Complicated UTI

Definition: a UTI that occurs in the presence of an anatomic or functional abnormality or a comorbidity that predisposes the animal to persistent infection, recurrent infection, or treatment failure. Recurrent UTIs, as defined by the presence of 3 or more episodes of UTI during a 12-month period, also indicate complicated infection.

- The same general principles as for uncomplicated UTI apply
- Efforts should be made to identify the underlying cause; consider referral
- Treatment should be based on the results of C&S testing
- Although 4 weeks has been recommended for treatment, shorter durations are likely to be recommended in the future, with a focus on clinical cure rather than microbiological cure.
- There is insufficient evidence to recommend “pulse” or chronic low-dose treatment, urinary antiseptics, and nutritional supplements such as cranberry juice extract for prevention of UTIs.

Subclinical Bacteriuria

Definition: presence of bacteria in the urine as determined by positive bacterial culture, in the absence of clinical signs of UTI.

- Treatment may not be necessary, but could be considered if there is a high risk of ascending or systemic infection (eg. patients with underlying renal disease)
- Diagnosis and management of the underlying cause is critical

Urinary Catheters

- Clinical signs of UTI absent: no culture or treatment indicated.
- Removal of urinary catheters: urine culture is reasonable if the risk and implications of a UTI are high. There is no indication for routine use of prophylactic antimicrobials.

- Clinical signs of UTI present: perform a culture after replacement of the urinary catheter with a new catheter. Several mL of urine should be removed to clear the catheter before a specimen is obtained for culture. Alternatively, remove the catheter and perform a cystocentesis. Culture from the collection bag, and culture of the catheter tip after removal are not recommended. Treatment should follow the guidelines for complicated and uncomplicated UTIs, and is more likely to be successful after catheter removal.

Pyelonephritis

- C&S testing should always be performed.
- Treatment should be initiated while awaiting culture results, using antimicrobials effective against Gram-negative *Enterobacteriaceae*. A fluoroquinolone is a reasonable first choice, after which treatment should be based on C&S results. If combination treatment was used initially and C&S results indicate that both drugs are not required, the spectrum should be narrowed.
- Treatment for 4 to 6 weeks is recommended until further information becomes available.
- Culture is recommended 1 week after starting treatment and 1 week after treatment is discontinued.

RECOMMENDATIONS FOR RESPIRATORY DISEASE

Acute Upper Respiratory Tract Disease (URTD)

- Consider an observation period of up to 10 days without antimicrobial treatment for cats and dogs with acute URTD. Antimicrobial therapy should be considered if a mucopurulent nasal discharge is accompanied by fever, lethargy or anorexia. In the latter case, appropriate empiric therapy would be doxycycline (first choice) followed by amoxicillin (the latter is not active against *Mycoplasma* spp.). The duration should be 7-10 days.
- Avoid performing C&S on nasal discharge from cats with acute URTD
- If empiric antimicrobial therapy is ineffective, a diagnostic work-up is indicated.

Chronic Upper Respiratory Tract Disease in Cats

- A diagnostic work-up is recommended. If treatable causes of nasal discharge are not identified, then nasal lavage or brushings could be submitted for C&S testing, and a nasal biopsy could be submitted for histopathology. Treatment should be based on these results.

- Should nasal discharge recur, the previously effective antimicrobial drug should be used for a minimum of 48 hours; if this is ineffective, then switch to a different class should be considered, provided a diagnostic work-up to rule out other causes of nasal discharge (tumors, fungal infection, foreign bodies etc) has been performed.

Bacterial Bronchitis in Dogs and Cats

- Airway lavage with cytologic examination and C&S testing is indicated if bacterial bronchitis is suspected
- While awaiting results of the above tests, empiric treatment is recommended with doxycycline for 7 to 10 days. If this results in clinical improvement, treatment should be continued for 1 week past resolution of clinical signs.

Pneumonia

- Antimicrobial therapy for pneumonia should be initiated as soon as possible and within 1-2 hours if signs of sepsis exist
- Antimicrobial therapy should be parenteral while patients with pneumonia are hospitalized
- If there is no evidence of systemic sepsis, parenteral administration of a beta-lactam is recommended for empiric therapy; if signs of sepsis are present, then a combination of a fluoroquinolone and a drug that targets gram-positive bacteria and anaerobes (e.g., ampicillin or clindamycin) is recommended pending the results of C&S if possible. Animals should be re-evaluated for possible discontinuation of antimicrobials no later than 10 to 14 days after starting treatment.

Pyothorax

- Pyothorax should be treated with IV fluids and drainage of pus after placement of chest tubes. Surgical debridement may be required for some animals.
- Empiric antimicrobial therapy pending the results of C&S should be with a parenteral combination of a fluoroquinolone and a penicillin or clindamycin
- It has been recommended that treatment continue for at least 3 weeks and ideally 4-6 weeks, but the optimum duration is unknown. Animals should be re-evaluated 10 to 14 days after starting treatment.

References

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