Table 3
Drug table summarizing recommendations for the management of bacterial urinary tract infection in dogs and cats.

Drug (WHO category)[a]	Dose	Comments
Amikacin (CIA)	Dogs: 15–30 mg/kg IV/IM/SC every 24 h Cats: 10–14 mg/kg IV/IM/SC every 24 h	Not recommended for routine use but may be useful for treatment of multidrug resistant organisms. Potentially nephrotoxic. Avoid in animals with reduced kidney function. Other factors (e.g. low pH) can affect aminoglycoside activity, which should be considered. Care should be taken when using it in combination with nephroactive drugs (e.g. NSAIDs).
Amoxicillin (CIA)	11–15 mg/kg PO every 8–12 h	Good first-line option for sporadic bacterial cystitis. Excreted in urine predominantly in active form if normal kidney function is present. *Klebsiella* spp. are resistant. Ampicillin is used in susceptibility tests to predict activity of amoxicillin. Breakpoint for susceptibility testing is ≤0.25 μg/mL for systemic infections but a breakpoint of ≤8 μg/mL can be used for lower urinary tract infections owing to high urine concentrations. Not recommended for pyelonephritis or prostatitis.
Amoxicillin/clavulanic acid (CIA)	12.5–25 mg/kg PO every 12 h Note: dose of total product (amoxicillin + clavulanic acid)	Not established whether there is any advantage over amoxicillin alone for sporadic bacterial cystitis. Reasonable empiric choice for cystitis when regional susceptibility data support a high prevalence of resistance to amoxicillin but susceptibility to amoxicillin/clavulanic acid. Not recommended for pyelonephritis or prostatitis. Breakpoint for susceptibility testing is ≤0.25 μg/mL for systemic infections but a breakpoint of ≤8 μg/mL can be used for lower urinary tract infections owing to high urine concentrations.
Ampicillin (CIA)		Not recommended because of poor oral bioavailability. Amoxicillin is preferred. Ampicillin is used in susceptibility tests to predict activity of amoxicillin.
Cefazolin (HIA)	22 mg/kg IV ~30 min prior to the procedure.	Main use is for peri-procedure prophylaxis as a single pre-procedure dose. Cefazolin, at a breakpoint of ≤16 μg/ml can also be used to predict activity of oral cephalosporins.
Cefovecin (HP-CIA)	8 mg/kg single SC injection. Can be repeated once after 7–14 days.	Duration and spectrum are longer than is typically needed, so not recommended for routine use. Should only be used in situations where oral treatment is not possible. *Enterococcus* spp. are resistant. Pharmacokinetic data are available to support a duration of 14 days in dogs and 21 days in cats.
Cefpodoxime proxetil (HP-CIA)	Dogs: 5–10 mg/kg every 24 h PO Cats: no dose established.	More active than cephalexin or cefadroxil against Enterobacteriaceae when using the breakpoint of 2 μg/mL for interpretation. *Enterococcus* spp. are resistant.
Ceftiofur (HP-CIA)	Dogs: 2 mg/kg every 12–24 h SC Cats: no dose established.	Approved for treatment of bacterial cystitis in dogs in some regions. *Enterococcus* spp. are resistant.
Cefuroxime (HIA)	Peri-operative prophylaxis: 20–50 mg/kg slow IV	2nd generation cephalosporin that can be used peri-operatively. *Enterococcus* spp. are resistant.
Cephalexin, cefadroxil (HIA)	12–25 mg/kg PO every 12 h	Narrow-spectrum activity; not active against Enterobacteriaceae when using the current breakpoint of 2 μg/mL but CLSI has recently revised the breakpoint to <16 μg/ml, consistent with human medicine. *Enterococcus* spp. are resistant.
Chloramphenicol (HIA)	Dogs: 40–50 mg/kg PO every 8 h Cats: 12.5–20 mg/kg (to a maximum of 50 mg/cat) PO every 12 h	Reserved for multidrug resistant infections with few other options. Myelosuppression can occur, particularly in cats and with long-term (e.g. >28 days) therapy. Avoid contact by humans because of rare idiosyncratic aplastic anemia. Not a first line treatment for pyelonephritis or prostatitis.
Ciprofloxacin (HP-CIA)	25–30 mg/kg PO every 24 h	Sometimes used because of lower cost than veterinary fluoroquinolones. Lower and more variable oral bioavailability than approved veterinary fluoroquinolones. Difficult to justify over approved fluoroquinolones. Dosing recommendations are empirical and based on limited pharmacokinetic studies. No interpretive criteria are available for testing isolates from animals as CLSI recommends that human breakpoints not be used for testing canine isolates. Not recommended for prostatitis.
Doxycycline (HIA)	5 mg/kg PO every 12 h	Not excreted in urine at high levels but can achieve levels that are effective against some pathogens. Reserved for infections caused by pathogens that are resistant to drugs that are actively excreted in urine in active form. Care should be taken with administration recommendations in cats to reduce the risk of esophageal ulceration.
Enrofloxacin (HP-CIA)	5 mg/kg PO every 24 h (cats) 5–20 mg/kg every 24 h (dogs)	Excreted in urine predominantly in active form. Reserve for documented resistant infections but initial/empirical choice for pyelonephritis and prostatitis in dogs at the higher end of the dosing range. Not recommended for *Enterococcus* spp. Associated with risk of retinopathy in cats. It is recommended to avoid enrofloxacin in cats. If it must be used, a dose of 5 mg/kg per day should not be exceeded.
Fosfomycin (CIA)	40 mg/kg PO (with food) every 12 h	Should be reserved for multidrug resistant infections. Do not use in cats. Potential option for pyelonephritis and prostatitis, dosed every 8 h.
Imipenem-cilastatin (CIA)	5 mg/kg IV/IM every 6–8 h	Reserve for treatment of multidrug resistant infections, particularly those caused by ESBL-producing Enterobacteriaceae or *Pseudomonas aeruginosa*. *Enterococcus faecium* is inherently resistant. Recommend consultation with a urinary or infectious disease veterinary specialist or veterinary pharmacologist prior to use.
Levofloxacin (HP-CIA)	25 mg/kg PO every 24 h (dogs)	Sometimes used as a lower cost fluoroquinolone. Licensed fluoroquinolones should be used when possible. High oral bioavailability in dogs.
Marbofloxacin (HP-CIA)	2.7–5.5 mg/kg PO every 24 h	Excreted in urine predominantly in active form. Reserve for documented resistant infections but good first line choice for pyelonephritis. Considered first-line choice for infections that involve the prostate. Not recommended for *Enterococcus* spp.

Table 3 (*Continued*)

Drug (WHO category)[a]	Dose	Comments
Meropenem (CIA)	Dogs: 8.5 mg/kg SC/IV every 12 h (SC) or every 8 h (IV) Cats: 10 mg/kg every 12 h IV, SC, IM.	Reserve for treatment of multidrug resistant infections, particularly those caused by ESBL-producing Enterobacteriaceae or *Pseudomonas aeruginosa*. *Enterococcus faecium* is inherently resistant. Recommend consultation with a urinary or infectious disease veterinary specialist or veterinary pharmacologist prior to use.
Nitrofurantoin (IA)	4.4–5 mg/kg PO every 8 h	Option for sporadic bacterial cystitis, particularly when multidrug resistant pathogens are involved. Must not be used for pyelonephritis or other infections where tissue (vs. urine) drug levels are needed
Orbifloxacin (HP-CIA)	Tablets: 2.5–7.5 mg/kg PO every 24 h Suspension (cats): 7.5 mg/kg every 24 h.	Excreted in urine predominantly in active form. Reserve for documented resistant infections but good first line choice for pyelonephritis. Considered a first-line choice for infections that involve the prostate. Not recommended for *Enterococcus* spp.
Pradofloxacin (HP-CIA)	Dogs: 3–5 mg/kg PO every 24 h. Cats: 3–5 mg/kg once daily (tablets) or 5–7.5 mg/kg every 24 h (suspension)	Evidence is published regarding efficacy for treating bacterial cystitis in dogs and cats. Greater activity against some bacteria than older fluoroquinolones (enrofloxacin, marbofloxacin, orbifloxacin). Theoretically a good first line choice for pyelonephritis, especially in cats. Not recommended for *Enterococcus* spp.
Trimethoprim-sulfadiazine/Trimethoprim-sulfamethoxazole/Ormetoprim-sulfadimethoxine (HIA)	15–30 mg/kg PO every 12 h Note: dose of total product (trimethoprim + sulfadiazine)	Appropriate initial or empirical option. Concerns regarding idiosyncratic and immune-mediated adverse effects in some patients; however, this is most relevant with long-term therapy. If prolonged (>7 days) therapy is anticipated, baseline Schirmer's tear testing is recommended, with periodic re-evaluation and owner monitoring for ocular discharge. Avoid in dogs that may be sensitive to potential adverse effects such as KCS, hepatopathy, hypersensitivity and skin eruptions. Activity against *Enterococcus* spp. in urine is controversial and should be avoided. Can be considered a treatment choice for prostate infections.