AMOXICILLIN

Drug Class: Penicillin (beta-lactams)

Spectrum: Bactericidal activity against Gram positives, Gram negatives and anaerobes, although resistance is relatively common in bacteria such as staphylococci and Enterobacteriaceae.

Resistance: Various mechanisms can be involved, and amoxicillin resistance is common in many pathogenic bacteria. If caused by beta-lactamase production, resistance can often be overcome by addition of clavulanic acid, tazobactam or sulbactam.

Mechanism of Action: Inhibition of cell wall synthesis, requiring actively growing bacteria. As a time-dependent drug, duration that the drug level is above the bacterial MIC is critical.

Distribution: Oral absorption is very good. Amoxicillin is eliminated in urine at high levels. There is good distribution throughout the body, but low levels in the CNS. Penetration of macrophages and other cells is limited so amoxicillin is less effective for treatment of intracellular pathogens.

Route of Elimination: Renal.

Adverse Effects: Vomiting and diarrhea and the main adverse effects, although these are less common with amoxicillin vs amoxicillin/clavulanic acid. Rare complications include immune mediated hemolytic anemia and hypersensitivity reactions.

Contraindications: Amoxicillin should be avoided in patients with a history of adverse reaction to amoxicillin or other penicillins. There is no evidence that it poses a risk in pregnant animals.

Common uses: Because of resistance, amoxicillin without clavulanic acid is uncommonly used, beyond the treatment of cystitis or for streptococcal infections. It can be used for broad-spectrum coverage, in combination with a drug such as a fluoroquinolone or aminoglycoside.

Dosing:

- ***Bacterial cystitis:*** 11-15 mg/kg PO q12h
- ***Other infections:*** 22 mg/kg PO q8-12h

Veterinary Drug Director Category: II (High importance)

Approved veterinary products in Canada: Yes

Additional information: Amoxicillin has a short half-life and requires frequent dosing. Apart from cystitis (because of high drug levels in urine), amoxicillin may be best administered every 8 hours.