AMOXICILLIN-CLAVULANIC ACID

Drug Class: Potentiated penicillin (beta-lactams)

Spectrum: Broad range bactericidal activity against Gram positives, Gram negatives and anaerobes.

Resistance: In Gram positive bacteria, methicillin-resistance is the main reason for resistance to amoxicillin-clavulanic acid. In Gram negative bacteria, extended spectrum beta-lactamase (ESBL) production is an increasing concern. ESBLs have variable impact on amoxicillin-clavulanic acid but clinically relevant resistance is common. It is likely of limited use against Bordetella bronchiseptica. It is also ineffective against organisms such as Mycoplasma and Pseudomonas.

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. Clavulanic acid inhibits beta-lactamase, thereby overcoming resistance that is increasingly common in bacteria such as staphylococci and Enterobacteriaceae.

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 compartments such as the CNS, prostate and eye. Penetration of macrophages and other cells is limited so this drug is less effective for treatment of intracellular pathogens.

Route of Elimination: Renal.

Adverse Effects: Vomiting and diarrhea and the main adverse effects. Rare complications include immune mediated hemolytic anemia and hypersensitivity reactions.

Contraindications: Amoxicillin/clavulanic acid 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: Amoxicillin/clavulanic acid is a commonly used drug because of its oral route, safety and spectrum of activity. It is used in a wide range of infections.

Dosing:

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

Veterinary Drug Director Category: I (Very High importance)

Approved veterinary products in Canada: Yes

Additional information: As a time-dependent drug and one with a short half life, frequent dosing is required. Dosing intervals longer than q12h should not be used. Every 8 hour dosing may be preferable in infections other than cystitis.