

PIG VETERINARY SOCIETY: PRESCRIBING PRINCIPLES FOR ANTIMICROBIALS

Antimicrobial resistance (AMR) is of increasing concern on a worldwide basis in the veterinary field but even more so in human medicine.

The majority of the evidence indicates that the selection of resistance in bacteria occurs both naturally and in response to antimicrobial (AM) use. In the latter case most resistance in an animal population occurs as a result of antimicrobial use in that species. Thus the main driver of AMR in human medicine is the use of antimicrobials in man.

However there is some evidence that AMR can in limited situations be selected in animals and can then transfer across into the human population, either by the movement of whole bacteria (such as zoonotic organisms) or by the more limited exchange of genetic material between bacterial populations (e.g. via plasmids). For a full description of AMR transfer see <http://www.octagon-services.co.uk/articles/resistance.pdf> (Transfer of AMR from man to animals is of course also possible)

The Pig Veterinary Society continues to fully support the responsible use of antimicrobials in pigs and believes that the primary responsibility of the prescribing veterinary surgeon is to the animals under his or her care and that members should comply with the Cascade restrictions at all times (<http://www.vmd.defra.gov.uk/pdf/vmgn/VMGNote13.pdf>). Consideration should always be given to the implications of AMR in pig pathogens when prescribing. However to minimise the risk of transfer of AMR from pigs to man the Society believes that members should take such risks into account when prescribing antimicrobials. The Society recommends a two part approach.

1. Minimise the total amounts of all antimicrobials used on pig farms. This can be achieved by regularly reviewing what might become routine use and to encourage clients to improve health of the pigs by a combination of management and environmental improvements along with appropriate use of vaccines etc thus lowering the requirements for antimicrobials. Consideration should also be given to the mode of delivery, choosing methods where possible to limit the number of animals being treated and the duration of treatment
2. Consider the types of antimicrobials used in pigs with respect to the implications for AMR in man. Many of the older molecules have little or no human indication and as such there is less concern over the use of certain products in pigs as a risk to human AMR. (The possibility of cross resistance must still be acknowledged) However the Society supports an approach where antimicrobials which are of greater importance in human medicine are voluntarily restricted in use. Where the group of antimicrobials fall into the 'last resort' category in human medicine they should only be used as such in pigs - as the Society has advised for many years.

The attached chart is intended as a reference document for the use of the different classes of antimicrobials in pigs and may be amended from time to time as knowledge and use of products changes. Establishing or confirming a diagnosis and obtaining antimicrobial sensitivity tests are also recommended where applicable - the sentests help support use of second or third class AM where this proves necessary and are also part of AMR surveillance for pig pathogens helping provide background information for practitioners. Whilst *in vitro* AM sensitivity is not always the same as *in vivo*, is a good starting point and can be a useful guide.

CATEGORY	ANTIBIOTIC GROUP	EXAMPLES
Class 1	TETRACYCLINES	TC
		OTC
		CTC
		DOXYCYCLINE
	TRIMETHOPRIM/SULPHA	
	PENICILLIN	PHENOXYMETHYL PENICILLIN
		PROCAINE PENICILLIN
	PHENICOLS	FLORFENICOL
	LINCOSAMIDES	LINCOMYCIN
	PLEUROMUTILNS	TIAMULIN
		VALNEMULIN
	AMINOGLYCOSIDES	NEOMYCIN (under SIC)
		STREPTOMYCIN
		APRAMYCIN
CLASS 2	BETALACTAMS (INCL 1 ST AND 2 ND GEN CEPHALOSPORINS)	AMOXYCILLIN
		AMPICILLIN
	AMOXYCILLIN/CLAVULANIC ACID	
	AMINOCYCLITOL	SPECTINOMYCIN
	MACROLIDES	TYLOSIN
		TYLVALOSIN
		TILMYCOSIN
		TILDIPIROSIN
		TULATHROMYCIN
	POLYMYXINS	COLISTIN
CLASS 3	FLUOROQUINOLONES	ENROFLOXACIN
		MARBOFLOXACIN
	3 RD /4 TH GEN CEPHALOSPORINS	CEFTIOFUR
		CEFQUINOME

CLASS 1 – STANDARD PRESCRIBING WITHIN RESPONSIBLE USE GUIDELINES

CLASS 2 - NOT TO BE USED UNLESS SENSITIVITY TESTS OR CLINICAL EXPERIENCE HAS PROVEN THAT FIRST CHOICE ANTIMICROBIALS ARE NOT EFFECTIVE OR AVAILABLE WITHIN TERMS OF THE SPC SUBJECT TO POINT 4 BELOW.

CLASS 3 – PRODUCTS OF LAST RESORT; ONLY TO BE USED WHEN NO OTHER OPTIONS ARE AVAILABLE AND SUPPORTED BY LABORATORY SENSITIVITY TESTS OR IN EXTREME CIRCUMSTANCES WHEN ALL ELSE HAS FAILED.

NOTES:

1. THE PRESCRIBING VETERINARY SURGEON'S PRIMARY INTEREST IS IN THE HEALTH AND WELLBEING OF THE ANIMALS UNDER HIS/HER CARE.
2. PRESCRIBING SHOULD ADHERE TO SPC RECOMMENDATIONS WITH THE CASCADE PROVISIONS ONLY APPLIED WHEN EFFICACY OR AVAILABILITY ARE INADEQUATE.

3. THESE GUIDELINES ARE PROVIDED WITH THE SPECIFIC INTENTION OF REDUCING THE RISK OF VETERINARY USAGE SELECTING RESISTANCE IN BACTERIA THAT MAY THEN TRANSFER INTO THE HUMAN FIELD AND POTENTIALLY CAUSE RESISTANCE THEREIN.
4. CONSIDERATION SHOULD BE GIVEN BY THE PRESCRIBING VETERINARY SURGEON TO THE IMPLICATIONS OF GENERATING/SELECTING RESISTANCE IN PIG PATHOGENS BY THE USE OF A BROAD SPECTRUM PREPARATION WHEN A MORE SUITABLE ALTERNATIVE IS AVAILABLE NOTWITHSTANDING THIS CLASSIFICATION