

Symposium focuses on the prudent use of antibiotics

At a recent symposium hosted by Huvepharma in Varna, Bulgaria the emphasis was very much on the prudent use of antibiotics.

Christian Friis, a veterinarian from the University of Copenhagen, addressed this important issue head on. He started by highlighting the joint opinion of ECDC, EFSA, EMEA and SCENIHR on antimicrobial resistance that confirmed previous recommendations:

- The prudent use of antimicrobials should be strongly promoted.
- Veterinarians and farmers should be educated on strategies to minimise antimicrobial resistance.
- Fluoroquinolones and cephalosporins should be reserved for treating conditions which respond poorly to other antimicrobials.

Prior to selecting an antibiotic for use in pigs it is desirable to know the disease and its causative organism, the potency of the antimicrobial against this organism and how effectively that particular antimicrobial will be distributed to the site of infection and the desirable antimicrobial concentration profile.

In addition, route of administration, duration of therapy, intervals between treatments and the possibility of resistance development need to be addressed.

Major bacterial disease problems in pigs include respiratory tract infections such as *Actinobacillus pleuropneumoniae*, digestive tract disorders, such as *E. coli*, salmonella, *Lawsonia intracellularis* and *Serpulina hyodysenteriae*, meningitis due to *Streptococcus suis* and arthritis caused by *Haemophilus suis*.

When it comes to dosing strategies the

time or duration of treatment is important when using penicillins and pleuromutilins and is of some importance for tetracyclines and macrolides, whereas the concentration of drug achieved is important for aminoglycosides and fluoroquinolones.

In theory some routes give better antimicrobial concentrations than others when assessed in terms of concentrations achieved or persistence of antimicrobial in the animal but these also have to be assessed within practical limitations, for example, farmers can not intravenously inject large numbers of pigs!

Danish success story

So, how successful has Denmark been at managing antimicrobial usage? Over the period 2002-2007 antimicrobial usage went up by some 20%. In 2007 there were 6,860 pig farms with a total of 1.158 million sows, of which 60% were on farms of >500 sows. Some 26.3 million pigs were slaughtered, of which 50% came from farms producing >15,000 pigs a year and there were <200 specialist pig veterinarians.

Prof. Peter Silley from the UK then considered the re-emergence of the antibiotic resistance debate because of concerns in relation to third and fourth generation cephalosporins and MRSA in pigs.

In so doing he considered antibiotic usage. In the UK about half the tonnage of antibiotics is used in people and this figure has risen over recent years.

Since 2004 the quantities of antibiotics used in livestock on a per tonne liveweight basis has fallen 25%. Interestingly, lactams,

which include third and fourth generation cephalosporins account for only 17% of the antibiotics used in animals, whereas they account for some 66% of the antibiotics used in man in the community and 77% of the antibiotics used in hospitals.

Despite successful campaigns in the UK to reduce prescribing of antibiotics in man in the 1990s the prescribing of antibiotics for use in man appears to be on the increase again. Even so, there has been minimal changes to the amount of antibiotic resistance reported in recent years.

In Holland, on the other hand, it was felt that resistance to lactams is on the increase especially in bacterial isolates from poultry. Accordingly the Dutch are looking very closely at the use of antibiotics in livestock and hope to reduce antibiotic usage in livestock by 20% in 2011.

However, a recent study suggests that the majority of this problem is not poultry related.

Historically, it would appear that most MRSA (methacillin resistant *Staphylococcus aureus*) isolated from animals, especially cows, originate from man.

However, recently more MRSA have been isolated from animals in Holland, especially from pigs and veal calves and distinct animal specific lineages have been identified.

It has also been shown that people in contact with MRSA positive animals have an increased risk of carrying the same strains and outbreaks of infection caused by ST398 MRSA in man have now been documented. For this strain its spread is thought to be facilitated by the use of tetracyclines in pigs and the spread of this organism has been facilitated by international trade in pigs. ■