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Research and Scientific Reports Update

JANUARY-MARCH 2013

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Antimicrobial resistance: BVA warns against 'kneejerk reactions'

Measures to combat antimicrobial resistance in the UK and Europe are in danger of becoming 'kneejerk reactions that are not based on sound science', the BVA has warned.

To mark European Antibiotic Awareness day on November 18, the BVA President, Peter Harlech Jones, delivered a webinar to over 300 veterinary surgeons entitled 'Resisting antimicrobials – are we acting responsibly?'. The webinar, which can be viewed at www.thewebinarvet.com/bva-webinars, forms part of the BVA's ongoing efforts to encourage veterinary surgeons to use antimicrobials responsibly to help preserve their efficacy. **The Association continues to remind vets that they must also be seen to be using products responsibly or risk legal restrictions being imposed on their use.**

Mr Jones commented: 'Any measures to tackle antimicrobial resistance must be based on sound science. At the moment we are resisting calls from parliamentarians and pressure groups in Europe and the UK to significantly restrict a veterinary surgeon's right to prescribe and dispense medicines according to clinical and professional judgment.'

FVE concerned about separating antimicrobial prescribing and supply

THE Federation of Veterinarians of Europe (FVE) has expressed concern that calls to 'decouple' the right to prescribe antimicrobials from the right to sell them are not supported by evidence that this is an effective way of reducing antimicrobial resistance.

The FVE's concerns come after MEPs on the European Parliament's Environment, Public Health and Food Safety Committee voted in November to adopt a resolution on antimicrobial resistance, which considered separating the prescribing and selling of antimicrobials (VR, November 17, 2012, vol 171, p 490).

Decoupling prescription from sale would 'seriously jeopardize the provision of veterinary services in rural practice throughout the EU, in particular in areas where the territorial coverage of veterinarians is poor', the FVE said in a statement published on December 4. It warned that, with the veterinary presence already limited in some regions, the resolution adopted by the MEPs might contribute to a reduction in the provision of veterinary services in such areas. 'As a result, disease surveillance and early diagnosis

will be impaired, compromising the health and welfare of the animals concerned,' it said.

The FVE added that the resolution would also mean that farmers would have to travel long distances to collect prescriptions, as vets would be prevented from delivering them. 'This would result in a serious risk of incomplete treatment, compromising the health and welfare of the animal, and even increasing the risk of resistance development,' it said.

'There is no clear evidence of differences in amounts of antimicrobials used between countries that have and that haven't decoupled,' said Christophe Buhot, president of the FVE. He drew attention to a report that had examined the effects of decoupling prescription from the sale of veterinary medicines and had concluded that this would not be effective. Instead, it recommended strengthening the position of the veterinary practitioner as 'gatekeeper'.

NK comment: *The current debate is highly motivated politically. Going forward, it is vital that all stakeholders (Veterinarians, farmers and farmer representative bodies) demonstrate a determination to use medicines responsibly, and to improve management, and systems of disease prevention*

Specificity of a coproantigen ELISA test for fasciolosis (LIVER FLUKE): lack of cross-reactivity with *Paramphistomum cervi* and *Taenia hydatigena* (stomach fluke)

P-E. Kajugu, BSc¹, and others

The diagnosis of chronic fasciolosis in sheep and cattle is usually based on faecal egg counting (FEC). **However, diagnosis of acute infection is often not possible because of the long prepatent period.** Furthermore, since fluke eggs are sometimes retained in the gall bladder of the host after the flukes themselves have been removed by successful anthelmintic treatment, a low positive FEC result may not truly reflect the current infection status (Mitchell and others 1998, Flanagan and others 2011b). **In order to help improve the sensitivity of LIVER FLUKE diagnosis, particularly with reference to detection of anthelmintic resistance, a commercial ELISA-based coproantigen test has been employed which more accurately reflects the presence of flukes in the host's bile ducts. This ELISA test on blood samples has the potential to indicate the presence of late prepatent flukes, often present in acute infections, and also to confirm the presence of flukes remaining in the biliary**

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system following unsuccessful or partially successful anthelmintic treatment.

NK comment: *The availability of serology, in addition to faecal egg counts greatly enhances diagnostic procedures for liver fluke, particularly in circumstances where there is a risk of acute fascioliasis, or anthelmintic resistance. The ELISA result is not influenced by the presence of paraphistomum. Diagnosis of Paraphistomum is based on the results of faecal egg counts and clinical history.*

Pig 'reference genome' could provide benefits for agriculture and medicine

M. A. M. Groenen, A. L. Archibald, H. Uenishi, C. K. Tuggle and others

THE authors of this multi-author paper explain how they have assembled and analyzed the genome sequence of a female domestic pig. **This reference genome, they state, could be applied to benefit agriculture and extend the potential of the pig as a biomedical model.**

Using a fibroblast cell line generated from skin taken from a Duroc pig's ear, clones of the pig were created. From these clones, the researchers constructed a high quality draft pig genome sequence and compared this with the genomes of wild and domestic pigs from Europe and Asia. **They discovered that there was a deep phylogenetic split between European and Asian wild boars around one million years ago**, substantiating the hypothesis that pigs were independently domesticated in western Eurasia and East Asia.

The **genome sequence**, they say, **provides a valuable resource, enabling the effective use of pigs in both agricultural production and in biomedical research.** Pigs are already used as models for human diseases, such as diabetes. To explore the potential for using natural models further, the researchers compared predicted porcine protein sequences with their human orthologues. They observed 112 positions where the pig protein has the same amino acid sequence that is implicated in human disease. **Most of the variants of these genes in human beings have been shown to increase risk in multifactorial traits such as obesity, diabetes, or late onset diseases such as Parkinson's and Alzheimer's disease.**

The authors also **allude to the possibility of using these results to help engineer pigs as a source of organs for**

transplants in human beings and to the insights from the reference genome that could be used to influence selective breeding for agriculture.

Nature (2012) 491, 393-398

NK comment: *The pig continues to provide new opportunities as a research model to researchers in human medicine, veterinary medicine and animal production.*

Welfare assessments for finisher pigs

New welfare assessments for finisher pigs are being proposed for inclusion in the Red Tractor Assurance farm standards from April 2013. The British Pig Executive (BPEX) says that 'Real Welfare' will give pig producers a practical system that will help them keep improving pig welfare and also provide scientific evidence to demonstrate husbandry standards to customers. It believes that the new welfare assessment puts the British pig industry in a good position to offer **a single 'welfare outcome' measurement system**, rather than individual retailers and food service companies developing their own variations.

Nina Wainwright, welfare project coordinator at BPEX, explained: 'For the first time, the English pig industry has **scientifically robust welfare measures which assess what the pigs themselves are telling us, rather than just assessing the pen or environment they are in.** The Red Tractor proposal, currently open for consultation, is for vets to carry out the assessments as part of the quarterly vet review visits. Real Welfare uses the same methods for all units, whether indoors or outdoors, or on straw or slats. **The industry's extensive practical research, working with the universities of Bristol and Newcastle, has narrowed it down to just five measures which we have proven to**

be useful – lameness, tail lesions, body marks, enrichment use and hospitalization.'

BPEX says it will be delivering Real Welfare training for all vets who carry out quarterly reviews for Red Tractor-assured pig farms and that it and the assurance scheme will be providing full details of the process.

NK comment: *Fundamentally, the above pig welfare monitoring system allows the pig to inform us of the welfare standards of his environment rather than relying on the investigators measurement of the quality of the pig's environment.*