

RUMA TARGET TASK FORCE
PIG SECTOR PROPOSALS FOR ANTIBIOTIC USE

Introduction

The UK pig industry, in common with commercial pig production worldwide, is recognised and acknowledged to be a high user of antibiotics and in the UK it is believed to use more *pro rata* than any other mainstream livestock production sector.

The reasons for high use are fundamentally a reflection of need, or perception of need. The use of antibiotics for growth promotion has been prohibited in the UK since 1 January 2006.

Specific reasons for antibiotic use in pigs at current levels include:

- a) A wide range of persistent enzootic bacterial disease challenges for which vaccines are not available, reliable or economically attractive (eg *Streptococcus* sp, *Haemophilus parasuis*, *Brachyspira* sp, *Lawsonia* etc).
- b) Continuous production systems at different points within the production cycle that allow enzootic disease to continuously recycle in a dynamic farm population. (This is a feature of commercial pig production worldwide.)
- c) Presence of major enzootic non-bacterial diseases which have immune modulating effects on pigs, “opening the door” to secondary bacterial disease (PRRS, *Mycoplasma hyopneumoniae* and PCVAD).
- d) Variable or inadequate vaccinal control of these and other agents.
- e) High proportion of UK pigs kept on solid floor (straw bedded) systems, creating hygiene challenges and increased faecal/oral recycling.
- f) Old buildings compromising environmental control and husbandry, (e.g. pig flow, hygiene measures)
- g) Poor understanding of environmental needs of pigs and poor control systems.
- h) Inadequate internal and external biosecurity measures.
- i) Geographical clustering of pig farms, leading to disease exchange and spread.
- j) Ease of medication via feed, encouraging prolonged treatments to fit with feeding regimes. Conversely limitations on water based medication application.
- k) ‘Cheap’ medication, especially via in feed route producing low cost insurance against disease threats.
- l) Habit.
- m) Fear of consequences of withdrawal following historical bad experiences.
- n) Pressures on farm margins requiring avoidance of production challenges and limiting investment in infrastructure, husbandry techniques etc.
- o) Planning constraints limiting new buildings and innovative changes.

The pig industry and its veterinary advisers – represented by the Pig Veterinary Society (PVS) – recognise their responsibilities in the context of antimicrobial resistance and intend to institute a challenging and rigorous plan to reduce and refine antibiotic use within the sector.

Data Sources and Start Points

It is proposed to adopt the European Medicine Agency approved methodology for calculating antibiotic use in pigs, which expresses use in terms of milligram active salt of antibiotic per kilogram population correction unit (mg/kg PCU).

Until April 2016 no coordinated system existed for measuring antibiotic use across pig farms; eMB Pigs was introduced then and considerable historical data has been obtained.

The UK sales data reported under VARSS 2015¹ is consolidated data from which it is not possible to accurately derive individual sector data. Based on the sales data in that report, knowledge of industry practice, anecdotal information provided by some pharmaceutical companies and feed compounders, and estimated usage in other sectors of livestock production, the following estimates of use in pigs in 2015 have been made.

Total Antibiotics sales for use			
In animals	:	403T	
Pig only products:		50T	(deduct 3T estimated use off label in game birds Aivlosin premix – giving 47T) = 47T
Pig and Poultry products:		212T	Estimated Pig component 66.6% = 142T
Multifood animal products:		28T	Estimated Pig component 10% = 2.8T
Total estimated pig use 2015:			<u>= 192T</u>
Pig PCU:		770,000T	
Estimated use:		249 mg/kg PCU	

As at 26th September 2017, eMB Pigs had captured 61% of UK pigs produced in 2015 with average recorded usage of 278 mg/ kg PCU.

Given the alignment of these two data sources the proposed baseline usage for 2015 is the midpoint of the two sources of approximately 263.5 mg/kg PCU.²

As from 14 November 2017 all Red Tractor assured pig producing farms will be required to have entered at least the two previous quarters’ usage data, which will cover 93% of all UK pig production. QMS assurance scheme in Scotland required use of eMBPigs from August 2016. The industry is therefore confident that accurate data of antibiotic use will be available for the majority of 2017 and subsequent years, both for individual farms and the industry as a whole. The actual figures from eMBPigs will therefore be used to track progress from 2017 on with sales data only used to broadly cross check the figures.

Furthermore, anecdotal reports of declining sales of antibiotics, particularly high volume in-feed products, in 2016 suggest usage in pigs declined substantially during 2016 possibly by as much as 35%. This decline can to some extent be cross-checked with VARSS 2016 sales figures when available. eMB Pigs data has been collected from 70% of pigs produced for

¹ Veterinary Antibiotic Resistance and Sales Surveillance Report 2015
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/582341/1051728-v53-UK-VARSS_2015.pdf

² The estimates suggest that the pig industry, which represents 11% of the total PCU production in the UK in 2015, consumed approximately 47.5% of all antibiotics used in animals (by active weight).

2016 and indicates a level of 183mg/kg PCU- a reduction in recorded use of 34.4% since 2015 .

Proposals

Experiences from within the industry already suggest that some producers have fully embraced the concept of antibiotic reduction. These have been achieved by a variety of approaches, including:

- Attitudinal change and a preparedness to attempt to reduce dependency borne of long-standing practice (the “courage to cut”)
- Introduction of improved or more extensive vaccination techniques whilst acknowledging that vaccines are not silver bullets
- Disease elimination strategies which frequently lead to a spike in usage of antibiotics before levels drop dramatically
- Day to day husbandry improvements
- Internal & external Biosecurity improvements
- Investment in buildings and infrastructure improving the environment and allowing improved husbandry practice.
- Moves away from in-feed medication to more strategic water or systemic treatments.

It is anticipated that the need for targeted prophylaxis will remain to protect the health and welfare of pigs but that habitual or routine prophylaxis (a “just in case” approach) should be rapidly phased out. Targeted prophylaxis is regarded as the use of preventative antibiotic medication in the short to medium term in a range of farm situation disease challenges. These include where no vaccines are available (eg swine dysentery) new or re-emerging disease outbreaks, time delays before vaccine regimes take effect, temporary unavailability of vaccines, persistent predictable disease problems that prove intractable to non-antibiotic interventions. In such cases the health and welfare of the pigs remains an absolute priority.

Metaphylaxis – the treatment of whole groups of pigs once disease has occurred in some of that cohort – will remain a fundamental requirement to ensure health and welfare in pig populations.

The industry, supported by its veterinary advisers, proposes a programme of substantial cuts in usage for the industry as a whole – with which each individual producer will need to engage. Anecdotal evidence from other countries suggests reductions of 70% or more (e.g. Netherlands) made too quickly can lead to unacceptable health and welfare compromise in individual farms and this must be avoided. Conversely, some UK producers have already reduced use by this level and more, following interventions such as those listed above.

UK pig producers have been widely canvassed by the National Pig Association (NPA) and a similar exercise including group debate with its members has been undertaken by the Pig Veterinary Society in an attempt to agree ambitious but achievable targets for average use of antibiotics in UK pig farms without likely risk to health and welfare.

The following programme is proposed for industry reduction targets commencing on 1 January 2016 and completing by 31 December 2020. eMB Pigs will facilitate ongoing

monitoring of use over time and the monitoring of health and welfare during this period is addressed below. Clearly under this programme significant reductions will have already have had to have been achieved.

2015 Baseline level 263.5 mg/kg PCU

Year 1 reduction 35%

2016 target 171 mg/kg PCU

Year 2 reduction target 25%

2017 target 128 mg/kg PCU

Year 3 reduction target 10%

2018 target 115.5 mg/kg PCU

Year 4 reduction target 10%

2019 target 104 mg/kg PCU

Year 5 reduction target 5%

2020 target 99 mg/kg PCU

This represents a five-year reduction target up to 31st Dec 2020 of 62.4% across the industry. Such reduction can be used as a guide for individual farms irrespective of their starting levels whilst acknowledging that the highest users, especially those who have yet to embrace the concept of reducing usage, may have to bear a disproportionate share of the total planned reduction.

Further reductions beyond 2020 should be considered closer to that time, dependent upon progress made, health and welfare of the national herd, developing technologies and economic considerations.

Critically Important Antibiotics (CIAs)

It is proposed that the European Medicines Agency (EMA) list of CIAs, endorsed by the Veterinary Medicine Directorate (VMD) and RUMA, and incorporated into the last resort category of the PVS prescribing principles, will be adopted. This comprises

- Fluoroquinolones (Fq)
- 3rd and 4th generation Cephalosporins (3/4 Ceph)
- Colistin

According to eMB Pigs data, pig use of these actives for the industry has been:

	Fluoroquinolones	3rd/4 th generation Cephalosporins	Colistin
2015	0.11mg/kgPCU	0.02mg/kgPCU	0.9 mg/kgPCU
2016	0.05mg/kgPCU	0.01mg/kgPCU	0.2 mg/kg PCU

Furthermore, following identification in late 2015 of Colistin resistant E coli in China, and acknowledgement of its critical importance in human medicine, not only has the low level of use in 2015 declined substantially but since the second half of 2016 to date it is understood that no distributor of Colistin has imported the product for commercial sale in the UK and thus usage now is believed to be negligible. It does and should however remain available should serious disease issues, for which its use is vital, arise. A maximum use target of

0.1mg/kg PCU will provide for the necessary reserve position but this may need to be reviewed if therapeutic use of Zinc Oxide is banned in the longer term.

Usage of Fluoroquinolones and 3rd/4th generation Cephalosporins in UK pigs is very low. Only individual treatment preparations of all such products have ever been available for pigs in the UK – no licensed mass treatment via water or feed has been used in pigs.

Both classes remain vital tools available to veterinary surgeons and their clients to treat specific conditions and for disease elimination programmes. Their use is constrained by the requirement of the PVS Prescribing Principles advice to which all veterinary surgeons attending Red Tractor assured farms and the equivalent in Scotland are required to give “due regard”. From October 2017, additional documented justification for such use on the Veterinary Health Plan will be required in all regions

It is proposed that no specific targeted reduction in use of these products over 2016 to 2020 be set, but it is anticipated that the low level of use across the industry will not rise above levels of 0.1mg/kg PCU for Fluoroquinolones and 0.015mg/kg PCU for 3rd/4th generation Cephalosporins– subject to disease control requirements to ensure health and welfare.

Monitoring

Antibiotic use during the programme will be monitored via eMB Pigs for the whole industry usage – to enable annual assessment of progress, but it is yet to be decided how and by whom individual farm monitoring will be regulated.

The PCU-based methodology is based on production of slaughter pigs. Six separate sub-categories of pig farm are recognised in the UK³ and beyond October 2017 it is anticipated that a bench-marking facility will be available within eMB Pigs to assist individual producers to assess their antibiotic use against the wider industry.

It is vital that both individual and collective health of pigs is monitored during this ambitious programme.

Veterinary surgeons attend Red Tractor assured farms each quarter (with some variance under QMS in Scotland) and it is their responsibility to assess health and welfare at every visit. This is achieved by clinical appraisal, diagnostic testing and record analysis. Herd mortality is a basic measure of welfare and is collected and reviewed at farm visits and consolidated industry data is published annually by AHDB Pork although the latter has limits of applicability as a monitor of welfare due to the time delay in reporting.

Real Welfare Outcome assessments under Red Tractor/QMS rules may assist in monitoring the overall welfare of the farm.

³ Breeder feeder, Breeder weaner, Breeder only, Nursery only, Finisher only and Nursery finisher. Finishing sites include breeding gilt production

Health monitoring in the abattoir by the meat inspector operated CCIR system is not deemed at present to be robust and reliable but all regions of the UK operate a veterinary based monitoring system for pig health (BPHS or its equivalent in Scotland and NI) which is capable of providing health feedback both individually and collectively. Improvements to quality control and standardisation of some components of these schemes in some regions is needed to provide the necessary robust monitoring.

Training

A range of pig farmer and stockmen training programmes on responsible use of antibiotics and wider issues of health management are available with suppliers ranging from AHDBPork, QMS, through local training groups to private veterinary practice operated courses. City and Guilds have updated their qualification on safe use of medicines to include responsible use of antibiotics and NOAH are in the process of developing cross-sector antimicrobial use training for farmers .

A primary purpose of Pig Veterinary Society is the provision of Continuous Professional Development and the Society's twice yearly scientific meetings regularly cover elements of effective and responsible prescribing , health control and disease elimination protocols and will continue to do so. The Society also produces guidance documents on an *ad hoc* basis for its members.

The National Pig Association's Pig Industry Antibiotic Stewardship Programme – available to all stakeholders - is appended to this report.

Information, guidance and case studies will also be distributed on RUMA's farm antibiotics website: www.farmantibiotics.org

Caveats

It is agreed by all significant stakeholders that health and welfare of pigs cannot be sacrificed on the altar of reduced antibiotic usage *per se*. It is anticipated that the approach suggested will lead to fundamental changes in attitude and practice on pig farms which will have economic and welfare consequences.

The proposed and longer term constraints and reductions potentially could be undermined by a number of issues:

- 1) Proposed ban on therapeutic use of Zinc Oxide in pig feed from 2022. This may, if enacted, require increased antibiotic use to control post weaning disease associated with E coli and Salmonella, with aminoglycoside, fluoroquinolone and colistin use likely to increase. Where persistent health problems ensue, antibiotic usage could increase at a farm level by 10mg/kg PCU or more over a year and this will need to be taken into account when reviewing progress towards the targeted reductions at both individual farm and industry level beyond the current target period.
- 2) New or re-emerging diseases. Many novel infectious diseases have appeared in UK pig farms in the last 50 years. These include the immune modulating viruses of PRRS and PCV₂. Should further new diseases arrive, it should be anticipated at least in the short to medium term that antibiotic use will need to increase to protect health and welfare.

- 3) In feed usage of antibiotics is declining rapidly. In many European countries, oral powders “top dressed” onto feed are widely used to target treatment to specific groups of pigs rather than the more blanket approach that is needed by antibiotic incorporated in the feed. Instructive guidance of VMD in the UK severely restricts the use of top dressing to individual animals with a very narrow range of products available. VMD is encouraged to review such restrictions.
- 4) In recent years the pig industry has been plagued with regular interruption to supply of certain vaccines, many of which have only one or two suppliers. This inevitably leads to disease breakdowns at individual farm level tending to increase treatment requirements.
- 5) The UK pig industry is small in international terms. As antibiotic use declines, the economic viability of supplying products into the UK market may be compromised with further loss of products. This could shift prescribing choices to specific classes of products, and increase resistance selection pressure on remaining products.
- 6) Moreover, should a consequence of Brexit be reduced UK medicinal product availability including vaccines, this could have implications for health control, triggering altered prescribing practices and increase in antibiotic use.

Should significant health and welfare problems be identified widely across the industry during the course of the reduction programme the targets proposed will require to be reviewed and if necessary amended. At a herd level this would be the responsibility of the prescribing veterinary surgeon but in the the wider context the Target Task Force would need to reconsider the proposals herein.

Government is invited to consider these ambitious proposals, and once agreed it is hoped that processors, retailers and NGOs will support them to achieve significant antibiotic use reductions, whilst taking due regard of the health and welfare of the pigs, and avoid creating a competitive approach to antibiotic reduction.

Richard Lister, Chairman NPA and a Yorkshire pig farmer
Mark White FRCVS, President of PVS and Chairman of PVS Medicines Sub-committee
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