Antibiotic use in the pig sector

Antibiotic use is particularly high in the UK pig industry. Although detailed species-specific data is not yet available, the Veterinary Medicines Directorate sales data shows that the total sales of antibiotics licensed for use in pigs or poultry in 2015 was between 300 and 363 tonnes of active ingredient.[i]

The Alliance to Save our Antibiotics has calculated that total antibiotic use in the UK pig industry in 2015 was at least 200 tonnes[ii]. This would equate to 260mg per kg of population correction unit (PCU; the European livestock unit) which is over five times higher than the government's target for farm antibiotic use (50mg/kg PCU). Antibiotic use in pigs in the UK is about five times higher than in Denmark (46 mg/kg PCU)[iii] and the Netherlands (53 mg/kg PCU)[iv] and about 25 times higher than in Sweden (11 mg/kg PCU)[v].

An overwhelming majority of use in pig farming is for group treatments, primarily added to animal feed, but sometimes in drinking water. There is no requirement for any of the animals to be diagnosed as sick before treatment commences. In the Belgian pig industry, which abides by similar legislation to the UK, a survey found that 93% of group treatments were purely prophylactic, involving no disease diagnosis.[vi] In the UK, it is likely that a very large proportion of group treatments in pig farming are similarly purely prophylactic.

Pigs in intensive, indoor systems often receive antibiotic treatment at each stage of their lives until slaughter, usually at under 6 months old. Piglets receive treatment for enteritis and respiratory disease. At weaning, usually at four weeks although this can be as low as three weeks, pigs will be mixed and develop post-weaning diarrhoea, and this is when antibiotic treatment is at its highest. [vii] Suckling pigs also have high levels of antibiotic use, but use is lower in fattening pigs. Older pigs are nevertheless susceptible to enzootic pneumonia, *streptococcus suis*, mycoplasma infections and swine dysentery.[viii]

Antibiotic use is much lower in organic pig farming. Danish authorities collect data on antibiotic use from all farms, which has shown that non-organic pigs received 10 times more doses than organic pigs.[ix] If UK organic pigs receive similar amounts of antibiotics as Danish organic pigs, then the difference between UK organic and non-organic pigs would be about 50-fold. This is consistent with a small 2006 Defra study of 12 organic and non-organic pig farms which found much higher levels of antibiotic use and resistance on the non-organic farms.[x] A Scottish Executive study similarly also found notable differences between systems.[xi]

Progress in this sector

AHDB Pork (formerly BPEX) has established the Pig Health and Welfare Council (PHWC) Antimicrobials Subgroup with the aim of helping the pig industry to reduce the overall use of antibiotics.[xii] With funding from AHDB-Pork and the Veterinary Medicines Directorate (VMD), the subgroup is developing a medicines hub to collect data on the actual use of antibiotics on pig farms. Pig farmers will be able to report their antibiotic usage to the hub, which will enable them to monitor their use of antibiotics over time.[xiii]

The National Pig Association is working with ADHB Pork, the Pig Veterinary Society (PVS) and the VMD on a new programme which focuses on collecting more accurate data on antibiotic use, and aims to educate farmers in effective disease control with less reliance on antibiotics.[xiv]

The PVS has published a best practice guide to responsible antibiotic use on farms in conjunction with the PHWC, and a set of prescribing principles, including a classification of all antibiotics into first, second and third choice; with second-choice antibiotics being reserved for cases where sensitivity testing or clinical experience has proven first-choice antibiotics are not effective, and third-choice antibiotics being reserved as last-resort medicines for when no other options are available.[xv] The PVS say that internal PVS data suggests that the use of antibiotics in pig production has fallen by 40% since 2014.[xvi]

Does this go far enough?

While the progress achieved so far, if confirmed by official statistics, is welcome, antibiotic use in British pig farming remains much higher than in countries such as the Netherlands or Denmark. Despite this, there remains significant opposition to such a ban in the UK. The next President of the PVS recently defended prophylactic use, stating that he wanted to be able to "prevent disease in every which way possible". [xvii]

There also remains, amongst some, a refusal to accept that the level of antibiotic use is linked to the farming system employed. In a 2014 document, the National Pig Association stated agreement "with the opinion of NOAH (National Office for Animal Health), that the intensive versus extensive farming debate is not linked to antimicrobial resistance".[xviii]

What's more, the industry continues to use the 'critically important' fluoroquinolone and modern cephalosporin antibiotics, despite rising concern around the implications of such use for human health.

What more must be done?

Routine preventative use of antibiotics in this sector should be banned, as has occurred in a number of European countries, including Sweden, the Netherlands and Denmark.

The PVS's classification of antibiotics as first, second and third choices needs to be improved, as at present, far too many antibiotics are classified as first choice (including the aminoglycosides, which are highly important in human medicine).

All, or virtually all, use of the critically important fluoroquinolones and modern cephalosporin antibiotics in pigs should cease. Most, and perhaps all, use of these antibiotics in the pig industry is likely to be entirely avoidable. In the Netherlands in 2015, the pig industry used no critically important antibiotics at all, and in Denmark just 4kg of each antibiotic class was used in pig farming in 2014.[xix] [xx]

Veterinarians should directly supervise metaphylactic antibiotic use, and regularly visit farms.

The Alliance to Save our Antibiotics is calling for:

- **An end to routine preventative treatments of groups of entirely health animals**
- **An end to use of the critically important antibiotics, or limits on their use to exceptional cases where sensitivity testing shows that no other antibiotic is likely to work**
- **A target for reducing antibiotic use in pigs to 50 mg/kg PCU within the next five years and for reducing use to 15 mg/kg within ten years.**

Recommendations for action

The Alliance to Save our Antibiotics recommends the following measures to optimise pig welfare and immunity, mitigate the risk of zoonotic diseases, and reduce unnecessary antibiotic use in this sector:

1) Maximise pig health and welfare

In intensive production animals are often confined in overcrowded conditions, usually with no outdoor access, and are bred for maximum yield. These conditions can compromise animals' health and immune responses, and encourage disease to develop and spread.[xxi] *The European Food Standards Agency has reported that large pig farms are twice as likely to be MRSA-positive as smaller farms and that this might reflect 'managerial practices typical of larger holdings'; ie higher levels of stress among animals, more transport of animals, more opportunities for transmission of bacteria and more use of antibiotics.* [xxii] *A Dutch study of 2007-2008 also found that larger pig breeding farms (over 500 sows) were twice as likely to be positive for 'pig' MRSA as smaller farms (under 250 sows).*[xxiii]

Moving to higher welfare production systems, where animals are bred for health and not just productivity, can reduce the need for antibiotic use. Well-managed outdoor systems for growers generally provide the highest welfare potential. Data from the UK shows that pigs reared outdoors can show lower mortality than those kept in intensive systems. [xxiv] *In confined, barren intensive systems, pigs are more likely to injure each other by tail biting*[xxv] *and ear and flank chewing, arising from boredom or stress. The injuries caused may be treated with antibiotics - generally on an individual rather than a group basis.*

If pigs are confined indoors it should be on deep-straw bedding rather than barren indoor systems, as these provide some enrichment (reducing the risk of tail biting and ear and flank chewing) and also improve air quality by reducing noxious odours.[xxvi] *Stocking densities should also be considered. At higher stocking densities, stress and aggression are increased, which contributes to more injuries, a depressed immune system and more disease*[xxvii]*. Mixing of unfamiliar pigs should be avoided, as this causes stress and suppresses the immune system, increasing both the chances of infection* [xxviii] [xxix] [xxx] *and the need to medicate pigs with antibiotics via their feed or water.*[xxxi]

2) Move to later weaning

Increasing the age at weaning is one method that could significantly reduce the need for antibiotic use in this sector. Danish statistics show that conventional weaner pigs receive about 20 times more doses per 100 animal days than organic weaner pigs.[xxxii] *A study comparing antibiotic use in pigs in four EU countries found that use in Sweden was nearly seven times lower than in France, and use in Belgium and Germany was even higher than in France. Most of the difference in use occurred in weaners: in Sweden weaners received less than one hundredth of the amounts of antibiotics weaners received in the other three countries. The most likely explanation for the difference was the later weaning of piglets in Sweden where the median age of weaning was 35 days, whereas in France, Belgium and Germany it was between 22 and 25 days.*[xxxiii]

Research has shown that early weaned piglets are more likely to suffer from diarrhoea because their intestinal barrier function against pathogens is more easily disrupted or broken down.[xxxiv] Prevention of diarrhoea is a major cause of the high level of antibiotic use in weaners.[xxxv] Moving to later weaning - in organic farming a minimum weaning age of 40 days is required, and a minimum of 56 days is recommended - would reduce stress and risks of scouring (acute diarrhoea, most frequently from E.coli infection). All pig farmers should move to later weaning. Regulators and industry should encourage and ultimately enforce a move to a minimum weaning age of 35 to 40 days.

Proving it's possible

Sophie Stoye from Eastbrook farm, a tenanted 1,350 acre organic livestock and arable farm in Wiltshire:

"Our whole system is geared towards maintaining good health through promoting strong immunity, while accepting that in an outdoor environment there will inevitably be some disease challenges. When we do use an antibiotic, it is usually for lameness, meningitis or occasional MMA (Mastitis, Metritis, Agalactia). All of these are individual treatments. In the last 5 years, we have done one group treatment, for a skin infection. Our total value spend on antibiotics over last 5 years for the whole herd is £905.56, in which time we have finished circa 14,000 pigs. Mortality is circa 9 to 11% pre-weaning, 1.5% post-weaning. No tail docking or teeth clipping is ever required. Key 'organic' features that help to reduce the need for antibiotics include:

- Early contact with soil, which seems important in protecting against scours, possibly introducing the right microorganisms for immunity to develop.
- Non-use of fenders (which keep piglets inside arcs, often until weaning). Fenders mean piglets have no contact with soil, and secondly, they urinate and defecate in the arc, so that there is much more condensation - leading to more respiratory challenges as well as an environment more conducive to the spread of bugs.
- We only using farrowing paddocks for one farrowing. We used to use each paddock twice, but had much greater scour problems pre-weaning. This ensures better grass quality, and a clean ground for each batch.
- Late weaning at 8 weeks, so piglets are strong and are eating plenty of hard food. Piglets weigh around 20kg at weaning, and there are no check in weight gain or post weaning scour problems. This means ensuring that sows can milk well for this period, without losing too much condition. The breed is helpful - Saddlebacks carries more condition and tend to have a moderate litter size. We aim for 11 born and reared, as then piglets can get good amounts of high quality colostrum and plenty of milk.
- We don't change diet formulation, using the same ration for lactating sows and growing pigs, which helps prevent digestive upsets. Growth rates are very acceptable, at c 700g/day ie finishing at c 80kg/DWT (110kg/LWT) at c 24 weeks.
- Stress is reduced as far as possible by maintaining stable groups from 10 weeks on, split sexed. Housed in these groups for up to 1 week prior to slaughter, with outdoor run, deep straw, forage supplied."

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The Alliance to Save Our Antibiotics is an alliance of health, medical, environmental and animal welfare groups working to stop the over-use of antibiotics in farming. It was founded by Compassion in World Farming, the Soil Association, and Sustain in 2009, and is supported by the Jeremy Coller Foundation

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