

# Developing Responsible Use of Antibiotics Protocols

**Keith Lawrence, BVSc, PhD, FRCVS, CBiol MIBiol**

*Technical Manager, Elanco Animal Health, Kingsclere Road, Basingstoke, Hampshire, RG24 8EU*

The emergence of Bovine Spongiform Encephalopathy (BSE) in Europe and its association with a human disease, variant Creutzfeldt-Jakob (vCJD), has had a profound effect on the psyche of consumers, politicians and regulators. This has been reinforced by the stream of food scares from E.coli O:157 H:7 to quinolone-resistant Salmonella and PCB contamination in Belgian animal feeds. The result has been an intense interest in the food chain, concentrating on food production methods. Everything that has been seen as accepted practice in the past is now open to challenge. Even the professions are having to justify and defend what they are doing.

Clear evidence of this change in approach within the European Union (EU) has been the ban of hormone growth promoters, beta-agonists, bovine somatotrophin (BST), Genetically Modified Organisms (GMOs) and more recently a group of antibiotic growth promoters that were related to human medicines. There has also been an increasing emphasis on seeking to attach blame for antibiotic resistance in hospitals and the community on the veterinary and zootechnical usage of antibiotics. This has triggered an increasing interest in how antibiotics are used on farms and attempts to measure the quantities used in agriculture. Out of this has arisen a move to promote the 'responsible' use of medicines, which is evident in either the development of formularies or responsible use guidelines.

In the United Kingdom we have developed a food chain initiative named the RUMA alliance - RUMA is the 'Responsible Use of Medicines in Agriculture'. We chose the word 'responsible' to describe the activities because of the dictionary definition set out below:

Responsible – Liable to be called to account, answerable to persons for things, morally accountable for actions, capable of rational conduct, of good repute, trustworthy. (Oxford English Dictionary)

All actions within primary animal production in Europe are open to scrutiny and auditing of the food chain is now routine. All actions of the veterinarian are likely to be challenged and we will be increasingly expected to explain and if necessary defend what we have done. The emphasis is moving to planning for health, not living with disease using routine medication.

What is in a guideline? The RUMA guidelines for Dairy and Beef Cattle are set out in Appendix 1 ([www.ruma.org.uk](http://www.ruma.org.uk)). They relate to the farmer's responsibilities and are specific to the UK but have a general application world-wide, as they are compatible with the WHO Prudent Use Guideline ([www.who.int/emc/diseases/zoo/who\\_global\\_principles.html#purpose](http://www.who.int/emc/diseases/zoo/who_global_principles.html#purpose)) and the WVA/COMISA/IFAP Guidelines ([www.comisa.org/ppaper.htm](http://www.comisa.org/ppaper.htm)).

We have seen the RUMA guidelines as a simple philosophy of use of medicines not as restrictive instructions. Only by changing farmer expectations can we change our behaviours in line with the philosophy of responsible use.

The RUMA guidelines for farmers are divided in to 12 separate sections that are self-explanatory and are listed below:

1. Use only officially licensed antimicrobials which have been lawfully obtained
2. Do not use antimicrobials as a substitute for good management, biosecurity and vaccination programs
3. Only use (POM) medicines with formal veterinary approval
4. Give the veterinary surgeon accurate information about the cattle to be treated
5. Obtain clear information from the veterinary surgeon on the use of the medicines and inform relevant staff
6. Ensure adequate management of in-feed and water delivered medicines to avoid cross contamination
7. For each medicine used on a unit keep the following information:
  - Data Sheet
  - Package inserts
  - Material Safety Data Sheets (MSDS)
8. Report all suspect adverse reactions to your veterinary surgeon
9. Ensure compliance with correct withdrawal periods
10. Monitor antibiotic use
11. Only mix medicines after specific approval by your veterinary surgeon

## 12. Maintain a medicines log book and copies of regulations

Coupled with these guidelines has been the release of 'Prudent Use Guidelines' by the British Veterinary Association (BVA) and the establishment of farm 'Health Plans'. The British Cattle Veterinary Association (BCVA) has produced two booklets:

- BCVA Herd Health Plan for the Purposes of Farm Assurance
- Guidance Notes for the BCVA Herd Health Plan

These booklets represent an holistic approach to the health of the animals on the farm and do not just concentrate on the use of medicines. (Sibley 2000).

These moves in the UK are typical of many around the world; in the United States similar guidelines have been developed by the American Veterinary Medical Association - 'Judicious Use Guidelines' ([www.avma.org/onlnews/javma/jan99/s011599b.htm](http://www.avma.org/onlnews/javma/jan99/s011599b.htm)) and each of the major food species divisions.

'Guidelines' have become necessary to increase transparency in the practice of veterinary medicine and of methods of animal production. They are also part of the drive for increased documentation of activities within the food chain. But we must not forget that there are no new veterinary antibiotics in the development pipelines, what we have we will have to use wisely. The final outcome from the use of guidelines is a move to minimize the antimicrobial selection pressure on food-borne pathogens, such as *Salmonella* and *Campylobacter*.

If I was to summarise the first part of the talk, the 'responsible' use of antibiotics does not necessarily mean using less. Rather it means being transparent in our decision making processes, justifying what we have advised and defending our decisions if necessary. We have to acknowledge the vitally important role of animal husbandry and management, biosecurity and nutrition in the prevention of disease. We must not be open to the charge that we are selling medicines just because the farmer has not looked after his animals properly, year after year after year.

What has been advised as a practical way forward? The need for a veterinary antibiotic policy was proposed by Pedersen *et al* (1999) and the herd level advice in the paper mirrors much of what was in the RUMA guidelines for farmers:

1. Improvement of production systems and management. Each disease outbreak is a very expensive lesson for the farmer, what advice can we give to avoid the next problem?

2. Causal diagnosis and antimicrobial susceptibility testing. This is most important with the bacteria with unpredictable sensitivity patterns, especially *Escherichia coli* and *Salmonella typhimurium*.
3. Use of narrow spectrum antibiotics. This is to minimize the selection pressure on other elements of the animal's natural flora (Neu 1992).
4. Conservative approach. How do we preserve the existing registered antimicrobials?
5. Establish treatment guidelines and prioritize the use of different classes of antimicrobials. Start with the older, narrow spectrum and then move to the newer, broad spectrum products.

What are the next steps? To move forward, the philosophy of the guidelines has to be incorporated into daily veterinary practice. They have to be included in the veterinary school curriculum and be the focus of Continual Professional Development programs. The animal health industry will also have to play its part by getting out the message via their technical representatives, in advertising and possibly in product label advice. However the most important element in this whole area is an assessment of the effectiveness of implementation of the prudent use guidelines. We are going to have to get used to monitoring antibiotic usage and to participating in surveys – remember the old adage "What gets measured gets done". My only concern in this whole area is that antibiotic resistance tends to be a local problem involving particular farms or counties, whereas antibiotic usage figures tend to be on a national basis. It is also still not clear what other parameters we could measure nor how we can get useful information from the results. What ever is measured we must be confident that it could drive decisions about future usage of medicines and assess the success of different management changes.

We must also involve the farmer organizations to pass the message to their members so that the veterinary profession is not seen to be on its own. With the farmer's expectations aligned with the veterinarian's more holistic approach to the prevention and treatment of disease we can make rapid progress towards meeting the consumer's expectations of not only today, but also tomorrow.

National guidelines to the use of medicines on farms are worth nothing if they remain as a paper exercise. They have to be put in to practice by every veterinarian and farmer each day to make any difference over time.

## Appendix 1. RUMA GUIDELINES - UK

### Responsible use of antimicrobials in dairy and beef cattle production

In order for medicines to be used responsibly they must be lawfully obtained and used in accordance with the label directions or veterinary advice. Produced by the Dairy and Beef Cattle Working Group of the **RUMA Alliance**. June 2000

#### For Farmers

The use of animal medicines carries with it responsibilities. Under UK legislation, all antimicrobials are licensed for specific species and uses. A product will not be authorised unless very stringent requirements are met. The use of therapeutic antimicrobials is under the direct responsibility of veterinary surgeons. Farmers, however, have a very considerable role to play in ensuring that the directions of the veterinary surgeon are properly carried out and also in developing and applying disease control measures which minimize the need for antimicrobial use.

*This booklet summarizes the **Farmer Responsibilities** section of the RUMA guidelines to provide quick and easy-to-read guiding principles for cattle producers.*

Antimicrobials have made a major contribution to farm animal health and welfare for several decades. They are vital medicines for the treatment and control of animal diseases. The use of a limited group of them at low levels as digestive enhancers has also made them a useful tool for farmers.

Concerns have been expressed about the crossover of resistant bacteria from livestock to the human population and the associated possibility of medical antimicrobial treatments becoming less effective.

The Responsible Use of Medicines in Agriculture Alliance (RUMA), a coalition of organizations including agricultural, veterinary, pharmaceutical and retail interests, has been set up to address these concerns. It aims to review the use of antimicrobials in animal production, and to establish practical strategies to enable farmers to reduce the need for their use.

To this end, RUMA has formulated comprehensive guidelines for the responsible use of antimicrobials in cattle production. These give advice on all aspects from application and responsibilities of the farmer and veterinary surgeon, to strategies for reduced usage. **This booklet summarizes the Farmer Responsibilities section of the guidelines.**

#### THE GUIDELINES

Farmers have a responsibility to safeguard the health of the animals on their farm. Where appropriate farmers may ask their veterinary surgeon to help them discharge this responsibility. Farmers and stockmen can play a major role in ensuring the responsible use of medicines on farms by following the guidelines below. Similar guidelines form part of all farm assurance schemes.

Regard therapeutic antimicrobial products as complementing good management, vaccination and farm hygiene.

A herd health plan should be drawn up that outlines routine preventative treatments (eg, routine foot care, mastitis plan, vaccination and worming programs, etc).

Initiate treatment with a medicine that is subject to a veterinary prescription only with formal veterinary approval.

In the case of in-feed medication this will be provided by a Medicated Feedingstuff (MFS) Prescription.

Ensure that accurate information is given to the attending veterinary surgeon in order that the correct diagnosis, medication and dosage can be calculated for the animals concerned, and ensure that clear instructions for dosage and administration are obtained and passed on where necessary to the staff responsible.

Ensure that a prescribing veterinary surgeon is aware of other medicines being administered, because adverse interactions sometimes occur.

Always complete the course of treatment at the correct dosage. Ensure that the dosage is dispensed in an effective manner by careful administration.

For in-feed or in-water medication ensure that the end of medication is accurately determined by cleaning the header tank or feed bin as appropriate.

Ensure that the appropriate withdrawal period is complied with prior to slaughter of the treated animals or the sale of milk for human consumption. In general, the withdrawal time required is specified on the Medicated Feedingstuff Prescription in the case of in-feed antimicrobials, or on the label of the medicine or as set by the veterinary surgeon.

Maintain an animal medicines record book on farm together with copies of relevant regulations and Codes of Practice.

Accurately record the identity of the animals medicated, the batch number, amount and expiration of the medicine used, the withdrawal period required and the date and time the medication was completed.

For all medicines used, appropriate information should be kept on file, for example, product data sheets, package inserts or safety data sheets as available.

Report to the veterinary surgeon, (or in the case of a non-prescription medicines, the supplier, or direct to the Veterinary Medicines Directorate) any suspected adverse reaction to a medicine in either the treated animals or farm staff having contact with the medicine. This should include any unusual failure to respond to medication. A record of the adverse reaction should also be kept on the farm: either a copy of the VMD adverse reaction form or a note in the medicines record book.

Co-operate with Farm Assurance schemes which monitor antimicrobial usage, medication documentation and withdrawal period compliance. However, such schemes should not constrain the farmer from preventing the suffering of his animals.

With your veterinary surgeon monitor antimicrobial usage taking account of the potency of various products.

Farmers and stockmen have responsibilities for the safe use, storage and disposal of medicines. These responsibilities include:

- Storage;
- Administration techniques;
- Recording;
- Withdrawal periods.

This must be backed up by recording systems which are essential in providing a framework for identifying disease problems and allowing appropriate changes to management practices. This can lead to a reduction in antimicrobial use.