

RESPONSIBLE USE OF MEDICINES IN AGRICULTURE ALLIANCE

**ruma**

**GUIDELINES**

**Responsible use of  
antimicrobials  
in sheep production**

Produced by the Sheep Working Group  
of the  
**RUMA Alliance**

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RUMA is made up of the following organisations:

Agricultural Industries Confederation  
Animal Health Distributors Association  
Animal Medicines Training  
Regulatory Authority  
British Poultry Council  
British Retail Consortium  
British Veterinary Association  
LEAF  
Meat and Livestock Commission  
National Beef Association  
National Consumer Council  
National Farmers' Union  
National Office of Animal Health  
National Pig Association  
NPTC  
National Sheep Association  
Royal Association of British Dairy  
Farmers  
RPSGB  
RSPCA

September 2005

Dear Reader,

It is with much pride and pleasure that I, on behalf of RUMA (the Responsible Use of Medicines in Agriculture Alliance), would personally like to welcome you to this second edition of the Guidelines. We trust that you will find them of benefit in the continual quest to maintain animals in maximum fitness and health and thereby provide food of the highest standard for the consumer.

This document is the result of the labours of many people and shows the benefit of an organisation such as RUMA which can call upon the knowledge and expertise of a large number of individuals in the different organisations that make up the Alliance.

This Guideline is a working document and is updated periodically as new information becomes available. The aim of these extended guidelines is to provide practical advice to advisers, be they veterinary surgeons or others, farm managers and interested farmers and stockpeople. Inevitably such a Guideline is lengthy and for many working at farm level they may find the shortened version. This can be found on the RUMA Website [www.ruma.org.uk](http://www.ruma.org.uk)

We are always interested in comments on how to best improve the Guidelines and any such suggestions will be welcome.

Peter Allen, MBE,  
Chairman, RUMA

## **FACTS ABOUT RUMA (RESPONSIBLE USE OF MEDICINES IN AGRICULTURE ALLIANCE)**

### **What is RUMA?**

It was set up in November 1997 to promote the highest standards of food safety, animal health and animal welfare in the British livestock industry. It is a unique independent non-profit group involving organisations that represent all the stages of the food chain from stable to table (allowing accountability and transparency) and from table to stable (allowing traceability). The aims, work and benefits of RUMA are recognised by members of the Veterinary Medicines Directorate, Food Standards Agency and DEFRA.

### **What are the Aims of RUMA?**

The main aims of RUMA are to:-

- (a) Identify issues of scientific and public concern in the areas of Public Health, Animal Health, Animal Welfare and the Environment.
- b) Provide an informed consensus view on the identified issues which will be developed by discussion and consultation.
- c) Establish and communicate guidelines which describe "best practice" in the use of medicines.
- d) Advise industry in the implementation of "best practice", especially in the development of Codes of Practice and Assurance Schemes.
- e) Communicate and to consult:
  - i) To change the way medicines are used.
  - ii) To influence the regulation of livestock production and use of medicines.
  - iii) To change the way farming is perceived.
- f) Promote the appropriate use of authorised medicines for disease prevention and control.
- g) Liaise with National Authorities.
- h) Identify practical strategies to sustain responsible use of medicines.

### **How Does RUMA Achieve its Aims?**

The most obvious way is the publication of the Guidelines for the responsible use of antimicrobials for all the major food producing species such as dairy and beef cattle, sheep, pigs, poultry and fish. These are all working documents and built up from the contributions from member organisations. They are always open to alterations in the light of new developments

RUMA is a policy making organisation rather than a political one. It aims to produce a co-ordinated and integrated approach to best practice. It has an established network with government departments and many non-governmental organisations. This allows a spread of information to be undertaken and responses to be obtained. There has also been considerable interest in Europe in RUMA's activities and discussions have taken place within the European Union and with other Member State's organisations.

Website: [www.ruma.org.uk](http://www.ruma.org.uk)

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## **Classification of Animal Medicines**

These Guidelines were drawn up at a time when the Veterinary Medicines Regulations 2005 are in draft format. The distribution categories will be changing: it is understood they will be:-

### POM-V (Veterinarian)

Medicines that may be prescribed by a registered veterinary surgeon following a diagnosis. The prescription may be dispensed by any registered veterinary surgeon or registered pharmacist.

To include: Current POM and some P products for food producing and pet animals together with current MFS products.

### POM – VPS (Veterinarian, Pharmacist, SQP)

Medicines which can be prescribed and supplied by a Registered Qualified Person (RQP) i.e. a registered veterinary surgeon, a registered pharmacist or a registered suitably qualified person (SQP) or they may be supplied separately by a RQP in accordance with a written prescription from another RQP.

Prior diagnosis is not a pre-requisite for a prescription for this category but the prescribing RQP must be satisfied that the person administering the medicine has the competence to do so safely and that the use is necessary for the routine control or treatment of endemic disease.

The RQP should take into account available Flock/Herd Health Plans when prescribing.

To include: Some current P, current PML products and MFSX products for food producing animals.

### NFA/VPS (Non Food Animal – Veterinarian, Pharmacist, SQP)

Medicines which can be supplied without a prescription by a Registered Qualified Person (RQP) i.e. a registered veterinary surgeon, a registered pharmacist or a suitably qualified person (SQP).

The RQP must check and be satisfied that the person administering the medicine has the competence to do so safely and that the use is necessary for the routine control or treatment of endemic disease.

To include: Some current P products, current PML products for pet animals (including horses which have been declared as not intended for human consumption) and MFSX products.

### AVM-GSL (Authorised Veterinary Medicine – General Sales List)

Medicines which may be supplied by any retailer. These may be for non food producing animals or will be included in the exemption list for food producing animals currently being elaborated by the Commission.

## **All antimicrobial products will be classified POM-V**

## Overview

For a specific disease to occur, certain combinations of factors involving the animal, the environment, and the disease agent must be present. Proper manipulation of nutrition, husbandry practices, and the environment will help to prevent disease. There are at least two reasons to give sheep proper care. One is an ethical concern for its well-being. Another is production efficiency. Management practices that incorporate good animal care are usually also the most effective from a production standpoint. When sheep receive good care, production costs are less than when they are not well cared for.

The incidence of disease in sheep is low compared to the disease rate of other important livestock species. Nevertheless, losses do occur and may be of considerable importance in individual flocks. If certain management practices conflict with the well-being of the animals, it will be to the producer's long-term advantage to adopt practices that put the animals' welfare ahead of short-term cost savings.

The health of sheep and the incidence of disease are directly affected by other areas of management. A high level of nutrition promotes general animal health and prevents many health problems. Farmers should know about the stresses, diseases, parasites and other health related conditions that may be unique to their area and especially to their specific operations. Disease control measures related to genetics and pasture management also deserve attention, especially when controlling health problems. Condition scoring to objectively assess body condition at certain critical times of the year to identify variability in the flock would allow action to be taken to prevent problems arising.

Veterinary surgeons ensure that animal diseases are properly diagnosed and help to design preventive programmes. Farmers should therefore consult their veterinary surgeon when they require a diagnosis of disease in their animals or when they need to design or modify a preventive disease programme. Disease prevention resulting in increased levels of health and performance must be made a part of a total management programme.

These guidelines are designed to help farmers evaluate their husbandry procedures with respect to the well-being of their animals. Proper management yields benefits to both the flock and to the farmer.

## Responsible use of medicines in sheep production

- a. RUMA guidelines for the responsible use of antimicrobials by sheep farmers have been designed to give easy-to-read guiding principles that can be used by sheep producers in the management of their flocks.
- b. Antimicrobials have, for decades, made a major contribution to continually improving sheep health and welfare. They are vital medicines for the treatment of bacterial infections in sheep.
- c. The emergence of antimicrobial resistance as a serious problem in human medicine has prompted concerns that a crossover of resistance or resistant bacteria from livestock could take place into the human population (and vice versa). If this occurred the effectiveness of some medical antimicrobial treatments could be compromised.
- d. The Responsible Use of Medicines in Agriculture Alliance (RUMA) is a growing coalition of organisations representing every stage of the "farm to fork" process. It has been set up to review and provide guidance on the use of medicines in all livestock. As part of this work RUMA has established practical strategies to reduce the need to use antimicrobials, where appropriate. RUMA fully supports the Government's Animal Health and Welfare Strategy and its Sustainable Farming and Food Strategy. RUMA seeks to promote responsible medicine use as an industry partner within these strategies.
- e. To communicate these strategies effectively to the industry RUMA has produced a comprehensive set of guidelines for the responsible use of antimicrobials in sheep and other livestock production. These give advice on all aspects from application and use, to responsibilities of farmers and veterinary surgeons, to strategies for reducing the need for usage. This booklet summarises the responsibilities that sheep farmers have as they use antimicrobials to safeguard the health and welfare of their flock.
- f. All antimicrobials used in the EU have been registered for their current uses on the basis that they are effective and safe to both man and animals. They reduce the suffering and distress associated with disease and speed recovery. Antimicrobials are sometimes used to prevent predictable disease incidence or at the outbreak of a disease in a flock to prevent in-contact infection (e.g. enzootic abortion, pneumonia).
- g. Without good health, an animal's potential cannot be fully expressed. Health is essential for efficient performance and disease control is a key element of any successful management programme. Treatment of disease is not as effective or as economical as prevention. Poor health status and sub clinical disease can be a major cause of losses in all forms of sheep production, including organic production. Many disease conditions can be avoided or minimised by using management practices that minimise exposure to disease, reduce stress, and include good hygiene and vaccination programmes. Key management areas are highlighted in these guidelines.
- h. Sheep farmers aided by their veterinary surgeons and others as appropriate aim to ensure that animals are kept in the best state of health and welfare. This must be viewed against a backdrop of a sound commercial base and the economics of the business but never compromised by it. The medicinal use of antimicrobials on all farms is under the supervision of the veterinary surgeon. It is a legal requirement for farmers to keep a record of the administration of medicines which must be available for inspection.

## RUMA Guidelines

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 major 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 minimise the need for antimicrobial use.

## THE GUIDELINES

All farmers have a responsibility to safeguard the health and welfare of the animals under their control. There are occasions where this joint responsibility is with their veterinary surgeon, such as in the discharge of correct and appropriate antimicrobial treatment and care. Farmers and stock-keepers can play a major role in ensuring that these responsibilities are properly discharged and that medicines are responsibly used by observing the guidelines published here.

- All sheep farmers must be totally committed to producing safe food.
- Sheep keepers have a duty and responsibility to safeguard the health and welfare of animals on their farm.
- An appropriate flock health plan should be drawn up, observed and regularly reviewed in association with the veterinary surgeon or others as appropriate. This plan should outline routine preventive treatments and management practices to cover issues such as foot care and vaccination programmes along with worming, lice and mite control strategies. Flock performance should be monitored for signs of disease and the flock health plan updated and implemented to take account of such signs.
- Therapeutic antimicrobial products should be regarded as complementing good farm hygiene and biosecurity.
- Treatment with a medicine that requires veterinary prescription should only be initiated with formal veterinary approval.
- Accurate information must be given to the veterinary surgeon to ensure correct diagnosis and so that dosages can be calculated. Clear instruction regarding diagnosis, medication, dosage and administration must be made available in written form to all who are involved in the care of the animals concerned.
- The prescribing veterinary surgeon must be made aware of all other medicines being administered to the animals concerned so that adverse reactions can be avoided.
- The full course of treatment at the correct dosages must always be administered, in a careful manner.
- For in-feed or in-water medication, ensure that the end of medication is marked by cleaning the header tank or feed bin as appropriate.
- All involved with the treatment must make themselves aware of the medicine information relating to withdrawal periods both for sheep destined for slaughter and for those producing milk for human consumption. This can usually be found on medicine labels but may be set by the veterinary surgeon.
- An animal medicine record book, copies of relevant regulations and codes of good practice must be kept safely on farm (e.g. the Veterinary Medicines Directorate (VMD) Code of Practice on the Responsible Use of Animal Medicines on the Farm).

- Accurate information must be kept on the identity of the sheep being treated as well as the nature of the condition being treated. Records should also include the batch number, amount and expiry date information for each animal treated and the withdrawal period that must be observed. Medicine records required by legislation should be maintained for at least five years (even if the sheep in question have been slaughtered).
- Information on all medicines in use should be readily available to stock-keepers and kept on file e.g. product data sheets, package inserts and safety data sheets.
- Follow the advice of manufacturers and regulatory bodies on the storage of medicines and the disposal of unused medicines (check the label or package insert). Safely dispose of unused or out-of-date medicines and containers and application equipment (including needles to a sharps container) when you finish the treatment for which they were intended. If in any doubt seek advice from your veterinary surgeon or whoever supplied the product.
- Any suspected adverse reaction in a sheep to any medicine should be reported immediately to the Veterinary Medicines Directorate (VMD) and the supplier. The report to the VMD can be done through the prescribing veterinary surgeon or the supplier. The adverse reaction can also be reported by the livestock keeper direct to the VMD. Adverse reaction forms can be found on its website [www.vmd.gov.uk](http://www.vmd.gov.uk). All such suspected adverse reactions should also be accurately recorded in the on-farm medicine records.
- Cooperate with and observe the rules of farm assurance schemes that monitor medication and withdrawal compliance. However any sheep keeper should never feel constrained from safeguarding the health and welfare of the sheep.
- Work with the farm veterinary surgeon in monitoring the effectiveness of antimicrobials used in your sheep flock and regularly investigate the possibility of alternatives (particularly through changes to management techniques to see if they can offer the same level of protection of health and welfare as the use of antimicrobials.
- Adequate training and good recording systems are essential to provide a framework for identifying disease problems and making the necessary changes to management practices. This can lead to a reduction in antimicrobial use. Staff working directly with animals should be trained to identify health problems early and in the use of veterinary medicines.

## Responsible Use - Veterinary Surgeons

1. The Royal College of Veterinary Surgeons Guide to Professional Conduct makes specific and detailed reference to the use of pharmaceutical products. In 1998 the British Veterinary Association published their Code of Practice on Medicines. The challenge to the veterinary profession is to ensure that the new codes of practice are effective and properly implemented. The British Veterinary Association runs a pharmacy course for veterinary surgeons. Every veterinary practice should aim to ensure that at least one member has completed the BVA Pharmacy course. The Sheep Veterinary Society has also amended the British Cattle Veterinary Association Herd Health Plan plus guidance notes for use in sheep flocks. The pharmacy course is now run by the divisions BCVA, SPVS and BSAVA.
2. Antimicrobials may only be prescribed and used under the direction of a veterinary surgeon when:
  - a. the veterinarian has been given the responsibility for the health of the animal or herd in question by the owner or the owner's agent
  - b. the care of the animal or herd by the veterinarian is real and not merely nominal

Although circumstances will vary enormously the veterinary surgeon must at least: (a) have either seen the animal for the purposes of diagnosis or prescription; or (b) have visited the farm or other premises in which the animal or herd is kept sufficiently often and recently enough to have acquired from personal knowledge and inspection an accurate and up to date picture of the current health status on that farm sufficient to enable him or her to make a diagnosis and prescribe for the animal or herd in question.

3. In all uses of antimicrobials the best available information should be used to determine treatment, the most prudent regimes and dosages. Where advisable and cost effective to do so the veterinary surgeon should perform post-mortem examinations, serology, farm visits and other relevant laboratory investigations as necessary. The aim is to provide optimal efficacy with minimal risk of resistance developing in either the target organisms, potentially zoonotic organisms, or organisms capable of transmitting resistance to pathogens. The veterinary surgeon will be the normal source of such information for the farmer.
4. All available practice information should be consolidated into one form or database, such that this information should:
  - Allow monitoring of the level of medication used
  - Contain a list of those medicines supplied to each farm
  - Contain a list of medicine withdrawal periods and a system for allowing information to be updated
  - A record of antibacterial sensitivities
  - Any comments concerning the response of medication under these circumstances

Any suspicion of adverse reactions or evidence of bacterial resistance should be thoroughly investigated with the support of in vitro bacterial sensitivity testing and the medication changed appropriate to these findings. Suspected adverse reactions should be reported to the Veterinary Medicines Directorate through the Suspected Adverse Reaction Surveillance Scheme (SARSS).

5. Veterinary surgeons should ensure that farmers are provided with clear instructions on all medicines prescribed and should ensure that these instructions are clearly communicated. Part of the instructions should be specific to the farm's particular situations including:
  - The correct dosage and duration of medication

- The correct indications for use
  - The correct procedures for ensuring adequate withdrawal periods  
 All of which is to ensure the accuracy of medication of animals at the anticipated site of infection.
6. These written instructions should be in conjunction and co-ordination with a written Flock Health Programme tailored to meet the needs of the farm and emphasising those areas of management that are likely to reduce the requirement to use medication.

## **Responsible Use - Farm Assurance Schemes**

1. Farm assurance schemes have a very important role to play in promoting the responsible use of antimicrobials on farms. Credible farm assurance schemes with a reputable inspectorate are essential if the industry is to reassure consumers. Farm assurance scheme assessments and audit trails should be consistent.
2. Farm assurance schemes often require farmers to nominate a veterinary surgeon or veterinary practice. Veterinary surgeons prescribing medicines are in a position to certify compliance with the standards of the farm assurance scheme in relation to antimicrobial usage providing the animals were actually under his care and he was aware of all products used on farm. Keeping records of medicine use whether or not medicines are prescribed and supplied by the veterinary surgeon is already a legal requirement on all farms in the UK. The VMD Code of Practice on the Responsible Use of Medicines should be adopted by the industry as a minimum standard.
3. Veterinary surgeons play an important role in farm assurance schemes while recognising the expertise of the farmer in managing his own livestock. A Flock Health Plan must be devised for the purposes of Farm Assurance where necessary with the assistance of a nominated veterinary surgeon. Regular and frequent review of the Flock Health Plan is recommended; on an annual basis, as a minimum. It is recognised that the frequency of the review will vary according to the situation and the requirements of the particular farm assurance scheme.
4. The Flock Health plan which should show routine preventative treatments (e.g. routine foot care, vaccination and worming programmes). The standards of Farm Assurance Schemes detail the responsibilities of stockmen for the safe use, storage and disposal of medicines.

# Practical strategies for reducing the need to use antimicrobials on sheep farms

## 1 Disease prevention

The best way to prevent disease is to prevent it from entering the farm. It is important to develop a preventive medicine programme and consulting with those who have additional expertise and experience in the use of medicines to prevent disease may assist this. In addition simple management techniques can play their part, for example taking care to ensure soil contamination does not occur in silage making will reduce the incidence of listeriosis

- a. Biosecurity is a flock management strategy designed to minimise the potential for introducing disease-causing organisms onto the farm or its buildings. People, animals or wildlife may transport diseases from outside the flock.
- b. From a health standpoint, it is important to remember that disease can spread from sheep on neighbouring farms. Attention should be given to the location of the farm, prevailing winds and the likelihood of accidental exposure to other cattle, sheep or wildlife. Domestic pets that have been exposed to other animals may also be a concern. Good perimeter fencing will discourage people and stray animals from entering the farm.
- c. Lorries that have visited other holdings may also carry disease organisms. All equipment and tools should be cleaned thoroughly after each use. Ideally animals should be loaded onto lorries near the perimeter of the farm so that livestock lorries do not drive across the farm.
- d. Ideally, visitors and vehicles from outside the premises should be cleaned and disinfected before going on the farm. Keep disinfectants available for those who must come onto the farm.
- e. Movement of animals to and from auction markets and shows must also be considered a potential risk.

## 2 Adding new stock to the flock

- a. Purchase healthy stock from reputable sources. The best way to prevent having to deal with a specific disease is to never introduce it onto the farm. Incoming stock must not have diseases new to the flock. There are certification schemes for several of the major sheep diseases e.g. EAE and Maedi-Visna. Try to avoid mixing animals from several sources. Make sure that animals are properly identified and delivered in a clean disinfected truck.
- b. When possible, quarantine all incoming stock, particularly breeding stock, for at least three weeks. Longer periods -- 30 to 60 days -- offer even more security. Try not to expose lambs to new animals.

**Table 1. Procedures to perform on incoming stock during the quarantine period.**

| Procedure   | When to perform                |
|---|--------------------------------|
| Observe for illness                                 | Entire quarantine period       |
| Serological tests?                                  | 14 days after arrival          |
| Vaccinate for clostridial diseases, pasteurellosis? | On arrival and two weeks later |
| De-worm and treat for lice, sheep scab              | On arrival                     |

- h. The quarantine period is used to observe the stock for any signs of illness. Clinical signs of illness disqualify the stock from addition to the main flock. Farmers should, if practical, try to notify the owners of the receiving farm if a disease outbreak should occur on the source farm during quarantine period.
- i. During quarantine, the animals can be tested for any diseases that may be of concern depending on the source of the stock. If the vaccination status of new animals is unknown the new animals should be vaccinated. Vaccination should be based on the prevalence of diseases in the area and the risk of contacting the organisms involved such as clostridial diseases. New animals should also be treated for internal and external parasites.
- j. Other methods for introducing new genetic material onto farms include the use of artificial insemination (AI) and embryo transfer (ET). Used properly, both can be useful for introducing new genes while minimising disease transmission risks.

### **3 Flock Health Planning**

- a. A Flock Health Plan should be developed with the assistance of a nominated veterinary surgeon where necessary. Regular and frequent review of the Flock Health Plan is recommended. It is recognised that the frequency of the review will vary according to the situation; to the requirements of the particular farm assurance scheme and might be on an annual basis. The Flock Health Plan should be tailored to meet the needs of the farm and emphasise those areas of management that are likely to reduce the requirement to use medication.
- b. Because of the prevalence and impact of specific diseases, a vaccination programme is usually practised. Stringent prevention programmes involving biosecurity practices and the routine isolation and quarantine of new animals, combined with routine surveillance and action when necessary, are the best health procedures.

### **4 Monitoring**

- a. Animals should be observed regularly for any sign of illness, injury, or unusual behaviour.
- b. Where advisable and cost effective to do so the farm veterinary surgeon should perform post-mortem examinations, serology, farm visits and other relevant laboratory investigations as necessary.
- c. Serological tests could be done for diseases common in the area where the flock is located. Diseases that can be monitored routinely include serology for Enzootic Abortion of Ewes and Maedi-Visna. Positive results must be correlated with clinical signs and farm history before specific recommendations can be made concerning the significance of the findings.
- d. Records of vaccinations and parasite treatments should be available to help detect health problems. These records do not need to be elaborate, yet are a valuable management tool. The more detail provided, the more likely that problems will be detected early.
- e. Farmers should seek veterinary advice if the incidence of acute mastitis exceeds 1 in 100. Insufficient milk (e.g. poor nutrition or rearing triplets), dirty lying areas and excessive teat damage are factors that can contribute to increased incidence of mastitis.

## 5 Vaccination programme

- a. Vaccination against diseases that are present in the area protects sheep from death, illness, and suffering and increases profitability. Vaccination programmes should be designed for individual flock situations. Proper diagnosis of health problems in sick animals and post-mortems on animals that die are excellent methods of updating a vaccination and preventive medicine program. Proper storage and administration of vaccines are essential if they are to be effective
- b. Vaccination is a powerful tool for controlling disease on farms. The use of vaccine has the ability to reduce the production losses associated with many diseases. Vaccines have two major effects. The primary benefit is to the animals that are vaccinated, as they are less likely to become diseased. These animals can therefore withstand disease challenges and perform better. The secondary effect of vaccination is on the flock. As the immunity of the individuals rises, fewer infectious organisms are shed. This further reduces the presence of disease on a farm, effectively raising the health of the total farm population.
- c. Vaccines are available for a number of diseases that affect sheep. In some cases, vaccination constitutes the major part of the control of the disease. In many other cases, it is only a small part of the control programme. Vaccination programmes should be tailored to each farm and can be developed in consultation with the farm's veterinary surgeon. Remember that vaccination only raises an animal's level of resistance. If other important management procedures are neglected, even this elevated level of resistance may be inadequate to prevent disease. . In many cases the incidence of disease can be reduced simply by improved management, for example thistle control and grazing management can reduce orf levels significantly without vaccination.
- d. Vaccines must be stored and administered according to label directions if they are to be effective. In most cases vaccines will need to be stored in a refrigerator. Refrigerator temperatures should be monitored. Withdrawal time to slaughter must be observed at all times to avoid residues. The most common times for administering many vaccines are before breeding and before parturition. This protects the dam and passes antibodies to the offspring for their protection.
- e. A combination clostridial vaccine should be given twice, four to six weeks apart, to all incoming breeding sheep. A booster should also be given to all ewes annually at least four weeks prior to lambing. Rams should also receive an annual booster. Lambs born to unvaccinated ewes may be vaccinated against clostridial diseases from two weeks of age. Lambs should receive a clostridial vaccine at weaning if they are likely to be exposed to the disease after their passive immunity has waned.
- f. Vaccines are available for pasteurellosis and should be considered where there is a history of pneumonia on farms. Where diagnostic tests are carried out the farm's veterinary surgeon will be able to advise on a vaccination strategy based on the farm history of such tests. Other vaccines should be evaluated on the criteria of risk of disease, cost and effectiveness.
- g. The basic programme for clostridial diseases may need to be modified for an individual farm situation, and timing may be changed to fit exposure and other challenges unique to a farm.

## 6 Internal and external parasite control

- a. Successful parasite control and prevention programmes require planning. Controlling internal and external parasites promotes animal health. Treatment with anti-parasitic medicines will usually stop death loss and cases of acute parasitism. However, unless this is part of a strategic programme, animals are often re-infected almost immediately by infective larvae and their worm burdens may return to near pre-treatment levels. Therefore each programme should have as a goal the elimination of chronic sub clinical parasitism and environmental contamination.

- b. Attention must be given to good management as well as drenching with anthelmintics for any programme to be successful. Farmers should read and follow the label directions to assure an effective programme and to avoid residues.
- c. Serious consideration should be given to all incoming breeding stock receiving treatment with external and internal parasiticides. Monitoring faecal samples regularly from each production area is a valuable tool in determining the presence of internal parasites. This allows further refinement of the worming programme and makes grazing management decisions more effective.
- d. Animals in all phases of production should be observed routinely for signs of external parasites. An external parasite control programme should be designed based on the results of monitoring.

## 7 Lameness

- a. Every effort should be made to control lameness as it can be a serious welfare and economic problem. If the cause of lameness is not clear, normal treatments are not working or the animal is severely lame veterinary help should be sought on welfare grounds.
- b. In sheep footrot and scald are the most common cause of lameness. Hoof trimming is an important part of routine foot care as well as often being necessary to make a diagnosis and as part of treatment of lame sheep. The use of foot baths for the control of both footrot and scald is recommended. Footrot can be controlled in all flocks and eradicated from closed flocks. Where possible all new sheep coming onto a farm should be kept separate from the resident flock until they have been examined, treated as necessary and rechecked before mixing.

## 8 Health management of newborn lambs

- a. Feed colostrums-- the sooner the better! The first hour after birth is optimum but all lambs should receive colostrums within six hours of birth. Newborn animals that receive adequate amounts of colostrums are far less susceptible to scours and other diseases. Make sure that newborn lambs suckle and if they don't then administer stored colostrum in a nipple bottle or with an oesophageal feeder. Quality colostrums collected on-farm is better than the commercially available colostrums substitutes.
- b. Accurate diagnosis of conditions in lambs is important for determining prevention and treatment procedures. Consider vaccinating newborn animals if unlikely to contain antibodies to a potential disease risk.
- c. Scour problems are an ever-existing threat to newborn lambs. A good programme of adequate nutrition, management, cleaning and disinfection and a good flock health programme are necessary to minimise the incidence and losses. Early diagnosis and treatment will reduce the threat of a flock outbreak. The correct diagnosis is also very important when considering vaccinations and other procedures for the flock prior to the next lambing season.
- d. Treatment for scours is very similar regardless of the cause. It should be directed toward correcting the dehydration, acidosis, and electrolyte loss. Antimicrobial treatment can be given simultaneously with the treatment for dehydration but is not always necessary. Dehydration can be overcome with simple fluids given by mouth early in the course of the disease. If dehydration is allowed to continue, intravenous fluid treatment becomes necessary.
- e. Naval dipping at birth is a tried and tested management technique which greatly reduces the potential for bacterial infection in new born lambs. Any potential point of access for bacteria poses a threat to the new born lamb. Care should be taken with tagging, castration and docking of new born lambs to minimise risk.

- f. Keep daily records on the treatment administered and a record of the lambs treated. This aids in evaluating the treatment and using follow-up treatments as necessary. If an outbreak of scours occurs, persistent treatment and records are essential for doing a good job.
- g. Farmers should be familiar with the detection and treatment of hypothermia in lambs. Where necessary instruction should be given in hypothermia resuscitation and the necessary equipment checked.
- h. Consider individually identifying lambs especially potential breeding replacements.

## 9 Enteritis and pneumonia

- a. Management practices are important in the prevention and control of enteritis and pneumonia, especially in terms of vaccination and housing, including appropriate disinfection routines and adequate ventilation. Good management and the use of appropriate vaccines often remove or significantly reduce the need for antimicrobial usage in the treatment of pneumonia. Early diagnosis of pneumonia and effective treatment helps to limit the spread within groups and should also reduce the effects in individual animals. Particular attention should be given to options for improving ventilation when pneumonia occurs. It is important to accurately diagnose the cause of the outbreak so that, in consultation with the farm veterinary surgeon, measures for treatment and prevention can be tailored for the agent responsible.

## 10 Preventing Injuries

- a. Animals can be injured in many ways. Good judgement must be used when designing and maintaining a safe environment for the animal. During the design process, it is necessary to think about potential problem areas, such as sharp corners, slick concrete or improper spacing. Existing facilities should be routinely evaluated to ensure that they are safe for the animals. Farmers should check the facilities regularly, noting the condition of fences, pens and flooring and making necessary repairs. The key to preventing injury to both animals and employees is being observant.

## 11 Disease treatment

- a. In spite of good preventive medicine programmes and proper care, animals may still become sick or injured. Accurate diagnosis allows selection of the proper treatment and helps in deciding what management steps, if any, are needed to prevent the spread of disease in the flock. Where the diagnosis indicates the potential for disease spread sick animals should be isolated to minimise the spread. Isolation also makes it easier to observe and treat affected animals.
- b. Whenever possible, precise diagnosis of deaths should be attempted. This allows for a more rational choice of treatment as well as identifying steps that need to be taken to protect animals that have not been infected. When the presence of a specific pathogen has been established in the laboratory, antimicrobial susceptibility (sensitivity) tests can be conducted to aid in proper antimicrobial selection. These services (including post-mortem examination of dead animals) are available through veterinary surgeons and the Veterinary Laboratories Agency. Contact names and telephone numbers should be kept in a handy location.
- c. Sick animals should be treated promptly. When using medicines, it is essential to read and follow the label instructions. A record of the product used, dose, duration of treatment, and period of withdrawal should be kept. A record of medicine usage is a legal requirement but it can also be useful in developing and documenting an adequate health care treatment plan.

- d. Medicines that are approved to be injected into animals or added to feed or water must be used only when absolutely necessary and where relevant, on advice by a veterinary surgeon and only as recommended by the manufacturer. Such products can help ensure the health and well being of animals and, when used strictly according to recommendations and regulations, will ensure a safe and wholesome product. Simple rules should be followed:
  - Label instructions must always be read and followed completely regarding dose, frequency and timing of use, and withdrawal intervals before marketing.
  - Treat all animals at the dose and for the duration recommended.
  - All medicines should be stored according to the manufacturer's instructions. Those medicines requiring refrigeration should be identified and kept in an efficient working fridge. Temperatures within the fridge should be monitored.
  - Details of purchase, use and disposal of unused medicines should be kept.
  - Treated animals should be identified to ensure that withdrawal times are observed.
  - When in doubt, seek professional advice.
  - Do not use any product for which clear instructions are not available.
- e. A variety of effective compounds are available for external and internal parasite control that can be administered in several ways. Again, the specific ones used and the timing of their administration should be planned carefully. As with vaccines, parasite control compounds must be administered according label directions, and withdrawal times to slaughter must be strictly observed.
- f. There should be a regular review of the medication prescribed to provide the opportunity to reassess the efficacy of treatment (treatment = medication + management) and to agree on changes where appropriate.
- g. Any suspicion of adverse reactions or evidence of bacterial resistance should be thoroughly investigated through the support of in vitro bacterial sensitivity testing with the medication changed appropriate to these findings.
- h. Prompt and appropriate disposal of dead animals is important for animal and human health. Dead animals can be a source of disease for other animals. They should either be removed immediately by a licensed rendering truck or completely incinerated.

## 12 Withdrawal periods

- a. Withdrawal periods are only established after considerable research and are set for the purpose of ensuring consumer safety. The withdrawal period is the time between the last dose given to the animal and the time when the level of residues in the tissues (muscle, liver, kidney, skin/fat) or products (milk, eggs, honey) is lower than or equal to the Maximum Residue Limit. The Maximum Residue Limit (MRL) is the maximum concentration of residue resulting from administration of a veterinary medicinal product which is legally permitted in the Community or recognised as acceptable in or on a food.
- b. When medicines are used for food animals studies must be carried out to assess the time needed for any residues of a substance or its metabolites which may still be present in an animal's body to fall below the level shown to be safe. Once this has been determined, the withdrawal period is established. The withdrawal period is the minimum time required between the last treatment and the collection of meat or milk for human consumption.
- c. The National Office of Animal Health (NOAH) includes a table of 'withdrawal periods for animal medicines' in the back of the NOAH Compendium of Data Sheets for Animal Medicines. The marketing authorisation holder must always be the absolute reference point for any information on a specific product.

- d. Authorised products have stated withdrawal periods. Where products are used outside the data sheet recommendations e.g. the dosage is increased; the treatment period is increased; the inter-dose interval is shortened; the treatment is changed to another product or there is simultaneous administration of other antimicrobials by the same or other routes then the veterinary surgeon should set a withdrawal period not less than the minimum of 7 days for milk or 28 days for meat.

## 13 Environment

- a. Insulation and proper ventilation of buildings will help prevent disease. Good ventilation and proper waste management will ensure acceptable air quality. Shallow ponds, slow moving streams, and other wet places breed disease. Drain or keep animals away from such areas.

## 14 Cleaning and disinfection

- a. Cleaning and disinfection is the most basic and most important of all the disease control measures. Prompt and proper removal of wastes, and cleaning and disinfection of both equipment and the environment is central to disease control. Effective disinfection requires cleanliness first because the disinfectants have little or no action on dirty surfaces. The organic material in manure and dirt inactivates the chemical disinfectant. Also, dirt and manure provide protection for disease organisms and the chemical solution is unable to penetrate and reach them. Cold temperatures reduce the effectiveness of most disinfectants. The chemical agents commonly used require several minutes in contact with disease-producing agents to be effective
- b. Cleaning can be done with a shovel and a brush or speeded up by use of high pressure washers and detergents or steam cleaners. When there is an excessive amount of manure or dirt present, the use of a detergent will speed up the job of removing the dirt by increasing the wetting speed, while a layer of water containing the disinfectant will remain on the surface to destroy the bacteria left after cleaning. Some detergents and disinfectants can be combined for easier one-step cleaning and disinfection.
- c. Problems that can occur as a result of poor cleansing and disinfection include watery mouth in new born lambs. Keeping the area around feeders as clean and dry as possible can help reduce the incidence of coccidiosis.

**Table 2. Common disinfectants, their characteristics and uses.**

| Active compound               | Uses                            | Range of effectiveness  | Disadvantages                                  |
|-------------------------------|---------------------------------|---|--|
| Chlorhexidine                 | Equipment, premises, foot baths | Some bacteria and viruses, ineffective against parvovirus, Pseudomonas                  | Reduced activity against certain organisms     |
| Cresols, Phenols              | Equipment, premises, foot baths | Variety of bacteria, limited effect on fungi and viruses, poor against bacterial spores | Strong odour with coal or wood tar distillates |
| Formaldehyde, other aldehydes | Equipment, premises, foot baths | Variety of bacteria, bacterial spores, fungi and viruses                                | Irritating fumes                               |
| Iodophors                     | Cleaned equipment               | Bacteria and fungi, limited effect on bacterial spores and viruses                      | Inactivated by organic material                |
| Inorganic Peroxygen Compounds | Cleaned equipment & buildings   | Many bacteria, viruses, fungi and spores  | Inactivated by organic material                |

|                                      |                   |  |   |
|--------------------------------------|-------------------|--|---|
| Quaternary Ammonium Compounds        | Cleaned equipment | Variety of bacteria, limited effect on bacterial spores, fungi and viruses | Inactivated by organic material, neutralised by soaps |
| Chlorine, Hypochlorites, Chloramines | Cleaned equipment | Bacteria and fungi, limited effect on bacterial spores and viruses         | Inactivated by organic material, may be irritating    |

## 15 Pest Control

- a. Pest management programmes are needed to control the infestation of pests on farms. Flies, rodents, and some species of birds are the common environmental pests. In addition to being a nuisance, pests can be a vector for diseases. Entrance points in feed mixing and storage areas should be covered with screen or sealed to prevent entry by pests. The elimination of breeding, roosting, and shelter sites will aid in pest control. Fouling of feed by cats and dogs can spread some diseases e.g. toxoplasmosis and hydatidosis.
- b. Only approved pesticides, properly applied, should be used in pest control. Guarding against any contamination of feed is essential to eliminate the possibility of unapproved materials being consumed by animals.
- e. The Echinococcus tapeworm can be controlled by worming dogs regularly for hydatids (every three months). It is also important to prevent dogs from eating raw untreated sheep meat and offal. Dogs should not be allowed to roam free and all dead sheep should be removed as soon as possible. Seek advice on the correct treatment as not all worm tablets control this particular tapeworm in dogs.

## Summary

**There should be consultation with a veterinary surgeon for help with disease prevention, control, diagnosis, and treatment. An animal health plan including vaccinations and parasite control should be developed and reviewed and updated often. Basic disease prevention and control methods should be used to the greatest degree possible.**

### Keep disease out

1. Source of sheep: Only buy or bring in sheep from flocks with similar or better health status. Quarantine newly introduced sheep and test for diseases where appropriate.
2. Vehicles: As far as possible keep vehicles outside the farm boundary – visitors, feed delivery, sheep delivery/collection, and especially CARCASE COLLECTION vehicles.
3. Minimise contact with other stock particularly at farm boundaries. Keep birds, cats and dogs away from feed stores. Control rats and mice.
4. Visitors: Don't allow visitors near stock unless essential. Provide CLEAN overalls and boots and/or appropriate cleaning and disinfection facilities.

### Keep disease levels down and stop spread

5. Vaccination: Develop a vaccination programme in consultation with your vet and make sure that animals are vaccinated and receive boosters as agreed.
6. Water : Keep water system clean, use known safe water source, avoid watercourses.
7. Cleaning and disinfection: Thorough cleaning and disinfection between groups of animals. Keep passages, walkways, loading ramps and trailers clean and disinfected.
8. Farm tools and equipment: Remember that farm tools, tractors and equipment can carry disease between groups of animals. Clean and disinfect shared tools and equipment between groups especially when moving from older to younger stock.
9. Personal hygiene: CLEAN and disinfect boots and wash hands between groups of animals. Provide staff toilet with wash basin, always wash hands after use. Take care if staff have Salmonella-like infections.
10. Order of work: Start with youngest animals and work up through age groups, change overalls at end of day, wash hands, clean and disinfect boots

### Help the stock to help themselves

11. Colostrum: Try to make sure all lambs get enough colostrum
12. Feed: Feed an appropriate balanced diet. Keep all feed stores/bins pest proof. Clean and disinfect feed bins regularly. Only buy from certified sources. Check for spoilage and mycotoxins.
13. Environment: Eliminate draughts, provide adequate ventilation and avoid large variations in temperature.

## Appendix A - Antimicrobials in sheep production.

### Treatment and prevention of disease

1. Microbial diseases cause pain, distress and economic loss. Authorised therapeutic antimicrobials reduce this suffering and distress and speed recovery in infected animals. Since the animal should not be allowed to suffer the alternative is to kill the animal. The removal of antimicrobials from veterinary medicine would cause great welfare problems.
2. The antimicrobials that are authorised for use in animals in the UK are detailed in the NOAH Compendium of Data Sheets for Animal Medicines published by NOAH, and in the Handbook of Feed Additives published by Simon Mounsey Ltd. Withdrawal periods for veterinary medicines are set to ensure that any residue which may remain after treatment is harmless. Information on withdrawal periods is contained in a table at the back of the NOAH Compendium.
3. Antimicrobials are less frequently used in sheep than in other farmed livestock species and therefore antimicrobial resistance is likely to be less common. The major antimicrobial exposure in sheep occurs during the treatment of pneumonia, watery mouth and enteritis in lambs and in the face of abortion storms. The next most common conditions for which antimicrobials are used to treat are lameness, mastitis and periparturient problems in ewes. Oxytetracycline, penicillin and streptomycin are the most commonly used antimicrobials on sheep farms. Decoquinatone is widely used for the treatment and prevention of coccidiosis. Sulphonamides are also used for the treatment of coccidiosis. The cost of many of the newer antimicrobials severely limits their use on sheep farms.
4. The current economics of sheep farming mean that the sheep farmer has to make very difficult economic and welfare decisions when debating the need for veterinary intervention with the use of antimicrobials.
5. Veterinary surgeons will always take a range of factors into account before deciding to prescribe antimicrobials and other forms of medication e.g. severity of disease in affected animals, definitive diagnosis, bacterial isolation and sensitivity if time scale permits, housing conditions, local farm knowledge and positive response to treatment. Therapy usually involves an individual animal or group of diseased animals. Antimicrobials, used responsibly, are an essential element in the fight against animal disease. However, in animals, as in humans, a significant proportion of those treated for infectious disease would recover without antimicrobials but at the expense in many cases of welfare and productivity.
6. Antimicrobials are sometimes used to treat a group of animals to prevent diseases that might occur. In some situations when the proportion of animals diseased during a defined time period reaches a threshold value, all animals in the group are medicated as the probability of most or all of the animals getting infected is high.
7. In both treatment and prevention the drug is administered over a defined, preferably short, period of time and is prescribed by a veterinary surgeon.
8. Antimicrobials help prevent the spread of infection by reducing the bacterial burden in infected animals and may reduce zoonotic disease by reducing bacterial contamination in the food chain at source.
9. Antimicrobials are administered by the most convenient and effective routes. Sick sheep are usually treated individually either orally or by injection. In some rare situations individual treatment may not be feasible and mass oral medication is the only practical method of treatment.
10. A review has been published of the diseases of sheep most commonly requiring treatment including treatment with antimicrobials (Bennett R.M., Christiansen K.H. and Clifton-Hadley R.S. (1999)

Direct costs of endemic diseases of farm animals in Great Britain. *Veterinary Record* (1999) 145, 376-377.) The authors of the review admit that the availability of appropriate disease data was a limitation on the estimation of the direct costs associated with each disease. In addition only the direct costs associated with the impacts of disease on livestock production were considered and not wider economic impacts, such as the implications for human health, animal welfare and the effects on markets, including international trade. The data presented are the best present day estimate available but demonstrate the potential economic impact of disease on the industry and an indication of the costs of control. The estimates also indicate the likely scale of detriment to the welfare of sheep if antimicrobials were not available for treatment.

### *The use of antimicrobials as zootechnical additives*

11. Antimicrobials do not appear to have ever been widely used as growth promoters by sheep farmers. The normal pattern of production at pasture did not lend itself to delivery of constant amounts of feed additives. Since July 1st, 1999 there are no antimicrobials licensed for use as zootechnical additives in sheep production. Antimicrobials which are not of value in the treatment or prevention of diseases may not be used in any species as feed additives from 1 January 2006, (Regulation (EC) No 1831/2003).

### **International perspective**

12. Resistance to antimicrobials is an international problem. Action by the EU on the basis of the precautionary principle cannot be enforced internationally. Imports of meat and dairy products from outside the EU may therefore come from animals that have been exposed to antimicrobials that are not authorised within the EU. There should be harmonisation of rules governing the use of medicines internationally coupled with policing that is of a universal standard.

The Responsible Use of Medicines in Agriculture Alliance (RUMA) was established in November 1997 to promote the highest standards of food safety, animal health and animal welfare in British livestock farming.

A unique initiative involving organisations representing every stage of the food chain process, RUMA aims to promote a co-ordinated and integrated approach to best practice in the use of animal medicines.

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**RUMA is made up of the following organisations:**

*Agricultural Industries Confederation (AIC)*

*Animal Health Distributors Association (AHDA)*

*British Poultry Council (BPC)*

*British Retail Consortium (BRC)*

*British Veterinary Association (BVA)*

*Linking Environment and Farming (LEAF)*

*Meat and Livestock Commission (MLC)*

*National Beef Association (NBA)*

*National Consumer Council (NCC)*

*National Farmers Union (NFU)*

*National Office of Animal Health (NOAH)*

*National Pig Association (NPA)*

*NPTC*

*National Sheep Association (NSA)*

*The Royal Association of British Dairy Farmers (RABDF)*

*Royal Pharmaceutical Society of Great Britain (RPSGB)*

*Royal Society for the Prevention of Cruelty to Animals (RSPCA)*