Check each animal’s bodyweight and dose according to the largest animal within the group being treated. Follow the manufacturer’s instructions concerning storage and handling of the wormer.

In ruminants, ensure administration is over the back of the tongue rather than into the mouth to ensure that the drug does not bypass the rumen.

**DO NOT**

- Do not use one drug class continuously for several seasons.
- Do not mix wormers with other products unless the wormer is indicated for use in this way.
- Do not treat unnecessarily.
- Do not treat animals and then release them directly onto “safe” pasture. Alternate strategies include delayed movement following treatment or partial group treatment. Seek specialist advice in this area from RUMA or SCOPS.

What is the VMD doing to try to slow the emergence of resistance to anthelmintics?

1. In July 2007 the Committee for Veterinary Medicinal Products (CVMP) adopted the “Guideline on the Summary of Product Characteristics for Anthelmintics” following EU discussion on the increasing problem of resistance to anthelmintics in sheep, goats, horses and cattle. This guideline recommends adding standard warnings in the Summary of Product Characteristics (SPCs) of anthelmintics for use in sheep, goats, horses and cattle. Therefore, the SPCs and product literature for anthelmintics for use in sheep, goats, horses and cattle now include the agreed phrases:

   Care should be taken to avoid the following practices because they increase the risk of development of resistance and could ultimately result in ineffective therapy.
   
   - Too frequent and repeated use of anthelmintics from the same class, over an extended period of time.
   - Under dosing; this may be due to underestimation of body weight, misadministration of the product, or lack of calibration of the dosing device (if any).

   Suspected clinical cases of resistance to anthelmintics should be investigated further using appropriate tests (e.g. Faecal Egg Count Reduction Test). Where the results of the test(s) strongly suggest resistance to a particular anthelmintic, an anthelmintic belonging to another pharmacological class and having a different mode of action should be used.

   To ensure administration of a correct dose, bodyweight should be determined as accurately as possible, accuracy of the dosing device should be checked.

   If animals are to be treated collectively rather than individually, they should be grouped according to their bodyweight and dosed accordingly, in order to avoid under or over dosing.

   2. In the future, additional warnings may be agreed documenting resistance patterns to specified actives in named helminths. If so, these will also be added to the product literature.

   3. The VMD welcomes the training provided by the Animal Medicines Training Regulatory Authority (AMTRA) of both student SQPs and qualified SQPs, in the area of anthelmintic treatment with special emphasis on the issue of emerging resistance and encourages its continuation and development.

   4. The VMD monitors the numbers of “Suspected Lack of Efficacy” reports as part of the pharmacovigilance surveillance which we perform. It is vitally important that all such events are reported to us, in order that we know the real picture of resistance in the UK and can advise manufacturers and users of anthelmintics accordingly.

   5. The VMD works closely with organisations such as SCOPS (Sustainable Control of Parasites in Sheep), NOAH (National Office of Animal Health), RUMA (Responsible Use of Medicines in Agriculture Alliance) and the BVA (British Veterinary Association) to promote the optimal use of veterinary medicines.

You can also phone the VMD on 01932 336911 for any additional assistance about veterinary medicines.
Anthelmintic Resistance and the Responsible Use of Anthelmintics

What is the current status of anthelmintic resistance in the UK?

Anthelmintic resistance has been recognised for a long time and there are increasing trends for the emergence of resistance to many of the commonly used anthelmintics. The purpose of this leaflet is to provide overarching, cross-animal species advice. However specialist advice should always be sought from the individual species groups for example Responsible Use of Medicines in Agriculture Alliance (RUMA) at www.ruma.org.uk or Sustainable Control of Parasites in Sheep (SCOPS) at www.defra.gov.uk

Currently, resistance largely affects worms which infect food-producing animals; sheep, goats and to a lesser extent cattle and horses. In some areas the emergence of multi-drug resistance is such that the only options remaining to farmers are to both clear the land and restock later or to diversify into other business areas. *Fasciola hepatica* (liver fluke) is also becoming more difficult to treat. This is particularly concerning as the changes in climate and recent warm wet seasons in the UK have increased the incidence of clinical fascioliasis. It remains unclear if this is true resistance or a function of reduced liver function in the affected animals due to chronic damage caused by the fluke. For advice on resistance patterns in specific helminth species please go to the specialist advisory groups noted above.

Why has this resistance occurred?

There are many causes and some of these include:
- Anthelmintics are highly effective but their continual use leads to selection for a resistant population.
- There has historically been a heavy reliance on anthelmintic use on many farms.
- This results in a shift over time in the *in refugia* population (the worms in the population left unexposed to the worming drugs) to contain increased proportions of resistant worms.
- Limited awareness of different classes of anthelmintics and the importance of using worm control strategies or the adverse effects of under dosing.
- Economics of sheep farming have resulted in farmers seeking less specialist advice rather than that of vets or Suitability Qualified Persons (SQPs) and/or the use of sub optimal doses of the products.
- Mis-diagnosis of symptoms leading to overseer and inappropriate use of anthelmintics where they are not indicated.

How can the development of resistance be slowed in the field?

Currently, we remain highly dependant on anthelmintics. Although there is now a wider acceptance of alternate grazing management practices designed to reduce the frequency of anthelmintic treatment and work is continuing into parasite control solutions which do not rely completely on veterinary medicines, for example biological control, host selection and worm vaccines, the reality is that alone, these methods are insufficient to control the problem.

The following strategies may be of use in helping to tackle the problem.

**DO – Develop Good Worming Strategy**

- Primarily target the drug used to the parasite to be treated based on correct veterinary or SQPs advice. An underlying annual (slow) rotation of anthelmintics between drug classes may also be helpful.
- Examine worming patterns. Avoid worming to a set pattern every year. Vets or specialist advisers can suggest how worming plans can be targeted and minimised. Continued faecal testing and adjustment of the worming programme accordingly from year to year is essential.
- Test which drenches are working effectively on farms by taking faeces samples before and some days after treatment. Vets and SQPs can provide advice on how this can be done. Treatment strategies can then be devised to take account of the current resistance status, with the aim of maintaining the effectiveness of the drug classes that are still working.
- Monitor worm counts from dung samples to determine optimal treatment regimens and times. Faecal Egg Count (FEC) monitoring is a vital component of determining when and which animals to treat. Regular use of FECs means that less anthelmintic is used and therefore the selection pressure for resistant worms is reduced. Keeping the treatment of mature sheep that are immune to most worm species to a minimum is also important.
- If you discover a “Suspected Lack of Efficacy” situation:
  i) Consult your vet or SQP
  ii) Report the event to the VMD’s Suspected Adverse Reaction Surveillance Scheme (SARSS) team using a yellow form.
  iii) Arrange specialist investigations to determine if this is a resistance problem or a different cause of the lack of efficacy. The manufacturer of the anthelmintic used may be able to help with this investigation.
- Control by grazing management requiring “safe” pasture to help to control worm burdens and this demands minimal anthelmintic input. Safe pasture may be derived from:
  i) newly derived pasture
  ii) aftermaths (hay, silage)
  and other methods.
- Try to implement integrated control strategies such as cropping, using adult non-susceptible stock (breeding for resistance/resilience to infestation – seek specialist advice from SCOPS or RUMA in this area) to reduce both the worm population on pasture and the requirement for frequent treatment.
- Treat all newly purchased animals on arrival with anthelmintics, based on veterinary or SQP advice, from two different classes (choose two classes with the lowest known levels of resistance), quarantine the animals after treatment and then release them on to dirty pasture (contaminated with worms) to avoid importing resistant worms.
- Create a health plan for individual farms in collaboration with a vet and/or specialist advisor.

**DO – Good Worming Practice**

- Ensure that the correct dose rates are always used based on the most accurate weight estimations possible. Always follow the manufacturer’s instructions and make sure that dosing guns dispense the correct volumes of product.

www.vmd.gov.uk