

Different Approaches, But One Common Goal to Control Liver Fluke

By Russel Fuller of Tyndale Vets and Ian Bates of Fenwold Veterinary Practice

Liver fluke infection, caused by *Fasciola hepatica*, is becoming more common across the UK, with the highest rates of infection seen in South West England, West Wales and South West Scotland. Flukicide resistance (to triclabendazole products) has been confirmed in sheep in the last few years and, given our understanding of resistance to wormers, this would suggest that resistant fluke are here to stay.

Understanding fluke infection requires an understanding of the life cycle (see diagram), and appreciation that fluke do not pass directly from cow to cow or sheep to sheep, instead they have to go via snails. That is why infection is typically seen in the autumn and winter, after the eggs have had time to hatch and the larvae develop in snails. The multiplication phase in snails is temperature dependent (80 days at 15°C but only 20 days at 30°C), so the weather will affect infection levels.

Farm testing

Before embarking on a liver fluke treatment regime it is important to determine whether a fluke problem actually exists on your farm. Treating unnecessarily costs you money and time, and promotes resistance. Testing for liver fluke can be done in the following ways, and makes it possible to build a strong picture of the overall parasite burden on farm, not just fluke.

- Faeces test for eggs: This will only show current infection by adult flukes,



The liver fluke causes damage by migrating through the liver. Pictures courtesy of Merial Animal Health.

so will be negative for the first 12 weeks of a sheep becoming infected.

- Slaughterhouse information: Most abattoirs will report when livers are condemned due to fluke damage. Once fluke is confirmed, the farm will need its own individual plan drawn up, as conditions and risks will vary considerably. Two principles need to be followed – reducing infection and appropriate monitoring/medicine use.

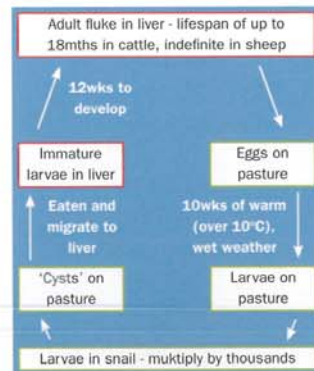
Infected areas

Any field with a snail habitat will remain permanently infected once fluke becomes established, even if left unstocked by livestock for several years, as fluke can infect all mammals, including rabbits and deer. So while strategic treatment using flukicides will help control the problem, long-term there will need to be a move towards preventing infection and reducing our reliance on medicines, as is happening with gut worms. Limiting new infections relies on preventing access of the grazing animals to snail habitats or removing snail habitats from the farm. Possibilities include:-

- Not grazing known fluke fields: A possibility if only some fields have a known fluke problem, assuming there is sufficient other grazing and the 'fluke' fields can be used for silaging etc.
- Strategic grazing: It may be possible to limit grazing of fluke areas in the autumn, limiting the number of new flukes entering the animals.
- Fencing fluke areas: This will prevent new fluke infections, but some farms may need to run an alternative water source to certain fields.
- Long term drainage of fields: Removal of the damp areas will remove the snail habitat and therefore the fluke risk

Each option has limitations, so farmers need to consider what is possible on their farm. It is also important to carry out monitoring and think about medicines use:-

- Treatment frequency during the grazing season will depend on environmental conditions: Wet summers provide greater habitats for the intermediate host snail and encourage proliferation of both the snail and fluke. NADIS provide regional forecast summaries which



- help to decide treatment protocols
- Treat with the right product at the right time of year: You will need a product that kills immature stages in October and mature stages in January. Rotate flukicides on a yearly basis to reduce resistance.
- Perform regular FECs, but remember egg shedding is intermittent and none are produced until adult fluke are present 12 weeks after infection.
- Investigate all case of ill thrift and remember plenty of other causes exist (trace element deficiency, dental disease, lameness and chronic conditions such as Johne's and scrapie etc).
- Investigate sudden deaths: Clostridial disease commonly causes sudden deaths secondary to liver tissue damage caused by an underlying fluke problem
- Quarantine bought in stock and use a flukicide to avoid introducing fluke in animals carrying the parasite. As levels of resistance to the fluke medications rise, it may become prudent to dose using two different fluke medicines at quarantine.
- Resistance (especially to triclabendazole) is increasing so any perceived treatment failures should be thoroughly investigated. It is important that both drug and non-drug control measures are used together, rather than relying on medicines alone. To treat liver fluke, you need to strategically treat with a flukicide product tailored to your individual farm and the stage of the fluke lifecycle, which is determined by the time of year and local farm factors such as climate,

grazing management, stocking density, ground conditions etc. There is no such thing as a 'routine' or 'blanket' control programme.

Data sheets may not be the most stimulating read (and can even induce a state of stupor!) but failing to abide by guidelines in the data sheets can result in reduced efficacy. For example, the Fasinex data sheet reads 'protect from frost' and the Combinex data sheet says 'store in a dark place below 25°C', meaning the Landrover dashboard or passenger seat is not a suitable drug cabinet!

As well as storing a drug properly, ensure all drenching equipment is clean and correctly calibrated before use, and DO NOT mix products in the same drench.

Dosing rates

Accurate dosing according to weight is very important, as under-dosing is a strong driver for resistance and overdosing risks toxicity. As a rule of thumb, treat according to the heaviest in the group and divide a group into two if there is a wide weight variation. Only a limited number of flukicide

products are available and not all will kill all the different stages of the fluke life cycle – for example, triclabendazole has activity against the mature and immature fluke down to two weeks in cattle, whereas nitroxonil injection only has activity down to six weeks (so fluke less than six weeks old will not be killed), and albendazole only kills adult fluke. Also, there is variation between the different methods of application, as oral preparations kill younger stages than injectable preparations.

Product choice

These points are important, as most of the liver damage is caused by the migrating immature fluke. Also, the inability to kill the earlier stages means that repeat treatments may be needed approximately eight to 10 weeks later, once young fluke missed by the first treatment come within the age of the 'killing zone'. And remember no flukicide has any kind of persistent action, so reinfection can occur immediately after treatment.

Treatment for an acute outbreak of disease should include the use of a product containing triclabendazole,

as this kills all stages of the parasite. However, due to increasing concerns over resistance, it may be prudent to use another product (e.g. closantel) to remove any late immature or adult flukes that escape the effects of triclabendazole. No other flukicide is available that offers the wide spectrum of activity of triclabendazole.

Whole farm

The whole farm approach to prevention and appropriate treatment will become increasingly important, as our reliance on flukicides will need to be reduced, either due to legislation limiting the flukicides available or the ever present threat of resistance. Planning now for the future is important, as many of the prevention strategies require considerable investment of time and money, and some farmers may find that the requirements of their agri-environmental scheme do not match their fluke control requirements.

However, there is some good news. Trials for a vaccine are currently underway, so in the future we may have a far simpler way to control fluke.

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