



**Bizzy Allen-McClure** BSc.(Hons) RVN MBVNA

Bizzy has been working in small animal practice since 2005 and qualified as a Veterinary Nurse in 2010. She currently works in a small animal, first-opinion practice and has an interest in parasitology and preventive veterinary health care.

# Lungworm in dogs – an update

**Bizzy Allen-McClure** BSc.(Hons) RVN MBVNA  
Sanctuary Vets, Mountbatten Estate, Jackson Close, Portsmouth, Hampshire, PO6 1UR. UK

**ABSTRACT:** Lungworms can affect domestic dogs and wild canids and infection may be life threatening if not treated. This article gives an update on the prevalence of the lungworm infection and its spread in the UK. It also discusses current licensed medication for treatment and prevention and new tests available for diagnosis.

There are many types of lungworm which affect dogs and that are endemic in the UK, but *Angiostrongylus vasorum* is the parasite which is the most pathogenic (**Figure 1**). Infection with this species can be fatal if left untreated.

*A. vasorum* is a metastrongylid nematode which infects domestic dogs and wild canids. It is spread by ingestion of intermediate hosts – slugs and snails – or paratenic hosts, such as amphibians. The adult worms live in the heart and pulmonary circulation of infected animals and the condition caused by infection is called angiostrongylosis.

## Signs

Clinical signs vary and can range from very mild to extreme illness and death. For this reason it may be very difficult to make a definitive diagnosis on the clinical signs alone.

☑ **Figure 1.** *Angiostrongylus vasorum*  
(Courtesy of Bayer Animal Health)



There are three main groups of signs with which infected dogs may present, and also a number of non-specific signs (**Table 1**). It is important to remember that a dog may show one or many of these signs; although there have also been asymptomatic cases diagnosed.

## Prevalence

Whilst previously the parasite had existing foci of infection in South East England and Southern Wales, infection has now been shown to be widespread throughout Central England, and has even been found as far north as Scotland (Ashley et al., 2012; Schnyder et al., 2013).

A study carried out by the Royal Veterinary College, London, surveyed 1,419 veterinary practices. Nearly one third of practices were aware of the parasite occurring within five miles and 20 per cent had seen at least one case (Ashley et al., 2012).

The exact reason for the spread of the disease is unknown but it has been suggested that it may be the result of the increase in the urban fox population, together with a change in climate that provides better conditions for slugs and snails to reproduce.

It has also been suggested that, perhaps, increased awareness of the parasite in the veterinary profession means that more cases are now being diagnosed.

The Idexx Laboratory is collecting data from positive angiostrongylosis tests in order to populate a map displaying the frequency of cases, to help vets throughout the UK stay vigilant against the disease (**Figure 2**).

Table 1. Signs of angiostrongylosis

Cardio-respiratory signs	Bleeding disorders	Neurological signs	Other non-specific signs
coughing	internal bleeding	paralysis	inappetence
exercise intolerance	epistaxis	ataxia	weight loss depression
'gagging'	hyphaema (bleeding into the eye)	'circling'	lethargy
respiratory distress	haemoptysis	behavioural changes	vomiting
	postoperative haemorrhage	seizures	diarrhoea

Cases can be reported at <http://angiodesct.co.uk>

The data collected so far demonstrate a wide spread of the disease throughout the country, with a higher prevalence in the South East of England and Southern Wales.

### Diagnosis

Previously, diagnosis of the disease involved analysis of faeces, using the Baermann technique, in order to detect first stage larvae (Willesen). As larval output can vary each day, faecal samples needed to be collected over three consecutive days to make sure larvae were not missed.

This method of testing is time-consuming and subjective. There are risks of false

negatives if the larvae are missed and false positives if free-living nematodes are accidentally identified as *A. vasorum* (Willesen).

Idexx Laboratory has recently launched a new in-house test for the detection of the *Angiostrongylosis vasorum* antigen in canine serum or plasma.

The presence of this antigen in the blood indicates that the dog is actively infected with the *A. vasorum* parasite. The test can be run on blood samples and results are available in 15 minutes (Idexx, 2013).

As well as testing patients that are suspected of being infected with *A. vasorum*, many practices have also started offering the test as part of a pre-anaesthetic blood screen prior to surgery to prevent risks associated with coagulopathies.

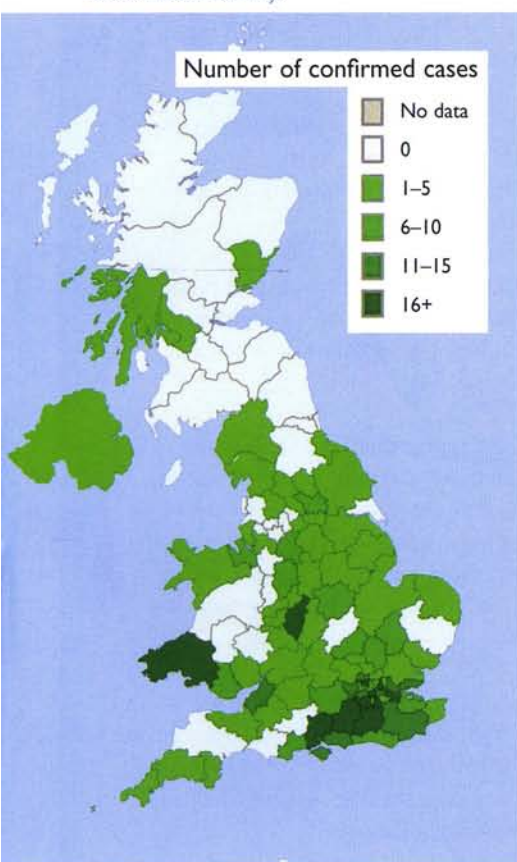
Additional supportive treatment may be required alongside the anthelmintic treatment, depending on the clinical signs shown and the severity of the disease.

It is important to remember that after treatment, the dog will be returning to the same environment from which it contracted the disease in the first place, and infected intermediate hosts may remain. For this reason, it is important to encourage pet owners to continue with preventive therapy and also to treat any other dogs in the household, regardless of whether or not they are showing clinical signs.

Other useful advice to give to owners includes:

- pick up toys from the garden at the end of the day to prevent slugs and snails residing on them and that could then be accidentally ingested by the dog
- clean water bowls regularly, as slugs and snails are attracted to water sources
- pick up faeces to prevent the spread of the parasite to other slugs and snails.

Figure 2. Map of reported cases of angiostrongylosis in the UK (Courtesy of Idexx Laboratories).



### Treatment and prevention

There are currently two licensed medications that can be used to prevent and treat angiostrongylosis (Table 2).

Table 2. Medical treatment of angiostrongylosis

Therapeutic agent	Treatment regimen	Prevention
<b>Imidacloprid</b> 100 mg/ml combined with <b>moxidectin</b> 25mg/ml in spot-on formulation  (Advocate, Bayer Animal Health)	A single spot-on dose should be administered. A further veterinary examination 30 days after treatment is recommended as some animals may require a second treatment.	Regular four-weekly spot-on application will prevent angiostrongylosis and patent infection with <i>Angiostrongylus vasorum</i> .
<b>Milbemycin oxime</b> 2.5 mg combined with <b>praziquantel</b> 25mg in tablet form  (Milbemax, Novartis Animal Health)	Milbemycin oxime should be given four times at weekly intervals. It is recommended, where concomitant treatment against cestodes is indicated, to treat once with the combination product and continue with the monovalent product containing milbemycin oxime alone, for the remaining three weekly treatments.	Administration of the product every four weeks will prevent angiostrongylosis by reducing immature adult (L5) and adult parasite burden.

## The veterinary nurse's role

In 2012, Bayer Animal Health commissioned a survey of pet owners and discovered that one third of dog-owning clients are not aware of lungworm, despite visiting a veterinary surgery in the previous 12 months, and that 70 per cent of dog-owning clients do not think that lungworm can affect their pet (Bayer, 2014).


This highlights an area in which the veterinary practice team can play an important role in the education of clients about the potential risks.

Bayer Animal Health has recently launched its 'Be Lungworm Aware 2014' campaign, which includes a new, hard-hitting television campaign (You Tube, 2014). This is a perfect opportunity for the nursing team to become involved in educating clients and promoting preventive healthcare.

It is important to educate owners that *all* dogs are at risk from infection – not just known slug and snail eaters. Owing to the very small size of some slugs and snails (sometimes smaller than a 5p piece), dogs can inadvertently ingest them when drinking from outdoor puddles and water bowls, or whilst playing with toys and eating grass.

### Summary

Although *A. vasorum* has been present in the UK for over 40 years, the scope for infection has now spread further than the initial focal spots. For this reason, it is important for all practice staff to be aware of the signs to look out for and to know the diagnosis and treatment options.

It is also important to educate owners about the possible risks to their dogs and to recommend a parasite-control protocol that takes into account the risk of becoming infected. 

### References

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### Further reading

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<http://angiodetect.co.uk>

[www.jungleforvets.co.uk](http://www.jungleforvets.co.uk)

## NEWS REVIEW by Jean Turner

### PupAid

PupAid has gathered the necessary 100,000 signatures needed to secure a parliamentary debate to ban the sale of young kittens and puppies, unless their mothers are present.

Such a ban would help reduce kitten and puppy farming where very young animals are separated from their mothers too early, thereby exposing them to stressful and potentially highly infectious environments before they go to their new homes.

### Firm launches puppy training films

Ceva Animal Health has launched a series of puppy training films to educate dog owners on new puppy ownership – from purchasing through to training.

The three films, which are available to view in the puppy section of the Adaptil website – [www.adaptil.co.uk](http://www.adaptil.co.uk) – are presented by dog trainer and behaviourist, Carolyn Menteith, and senior veterinary adviser at Ceva Animal Health, Sarah Endersby.

The first film, 'How to pick the right puppy', features information on how to look for a puppy using adoption centres and Kennel Club registered breeders and the considerations to take into account when choosing a dog. These include how much exercise different breeds require, grooming (for example would an owner like a long- or short-haired dog) and whether a particular breed of dog is good with children.

The first film also advises new dog owners on preparing a home for a new puppy and the equipment that they may wish to buy.

Covering the general healthcare of a puppy once it is home, the second film, 'General healthcare of your puppy', consists of information on how to settle a puppy when it is brought home and how to choose puppy classes.

It also features details on vaccinations, keeping control of fleas and worms and diet, together with educating dog owners about toilet training their new pet and the importance of socialisation and habituation.

With guidance on basic puppy training, the third film – a 'Practical guide to basic training with your puppy' – features practical demonstrations on how to start training a puppy including teaching a dog to sit, go down, recall and walk on a lead. It also advises owners on what to look for in a puppy class and the importance of training a puppy in a variety of locations, not just at home.

According to the firm, the puppy training films are useful tools for animal health professionals to utilise to help educate puppy owners on every aspect of new puppy ownership and can even be embedded into your own website via YouTube. To view the films visit [www.adaptil.co.uk](http://www.adaptil.co.uk)

