

## Q&A *Babesia canis*

### 1) What is *Babesia canis*?

*Babesia sp.* are tick-borne protozoal parasites which infect red blood cells of mammals and can cause in some cases severe anaemia. *Babesia canis* specifically infects dogs. Other species of *Babesia* are host-specific and may infect livestock in which it is commonly known as piroplasmosis or red water fever.

### 2) Does this pose a human health risk?

According to Public Health England *Babesia canis* is not considered to cause human disease and therefore does not present a risk to human health

### 3) How is the disease transmitted?

*Babesia* parasites are generally spread by ticks although they can be spread by other means such as blood transfusions, contaminated veterinary equipment and possibly between dogs through fighting. Pregnant dogs can give *Babesia canis* to their unborn puppies (transplacental transmission).

### 4) How do dogs become infected?

- i. A dog could acquire the infection when living in, or travelling to, countries where *B.canis* occurs;
- ii. A dog could also acquire the infection in the UK from an infected tick that has been inadvertently brought into the UK. The *Dermacentor* tick species can be carried on other animals, including cattle, horses, sheep and pigs and the immature stages feed on small rodents. Unless the tick is removed by the dog's owner and then destroyed, the infected tick continues the life cycle, laying eggs which may be infected and can develop into new infectious ticks. There is not direct dog to dog transmission with the same tick feeding on both animals;
- iii. A dog that has contracted *B. canis* abroad could, on its return, pass its infection into a suitable tick living in the UK, which feeds on the infected dog's blood. The original dog may not be obviously ill (or may have received treatment) but can still potentially pass on infection to local adult female ticks feeding on it. The adults then drop off, lay eggs, which can be infected transovarially and develop into more infectious adults. These infected local ticks could then transmit infection to other local dogs. Tick treatment at point of entry into the UK would not prevent this pathway occurring.
- iv. It is also possible that a dog could acquire the infection from one of the small populations of this species of tick that are known to be established in a few

areas of the UK and which may have become infected with *Babesia canis* themselves, though the pathway (iii) above.

## 5) Can it pass from dogs to humans?

No, *Babesia canis* cannot be spread from dogs to humans.

*B. canis* is normally spread from dog to dog by vector borne transmission via infected ticks. Ticks must be in place on the animal for several days before transmission will occur. The life cycle of the tick species identified in Essex is that adult females feed on a dog, fall off, lay eggs on the ground which develop into adult ticks via larval and nymph stages which may feed on small rodents. The eggs can be transovarially infected and develop into infectious adults. The adult female, once she has taken a blood meal, will not feed again.

Other less common routes of infection between dogs are:

- Pregnant dogs can give *Babesia canis* to their unborn puppies;
- *Babesia* can be spread between dogs via blood transfusions, contaminated veterinary equipment;
- Transmission between fighting dogs, where blood from one enters the wound of another (not saliva) has been shown for *Babesia gibsoni*.

## 6) What are the symptoms in dogs?

The clinical signs of *Babesia canis* include lethargy, weakness, vomiting, anorexia, fever, pale mucous membranes, and dark discoloration of the urine. There may be other symptoms including neurological and respiratory signs.

## 7) How is *B. canis* diagnosed?

*Babesia canis* is not easy to diagnose from clinical signs alone. It can be diagnosed with blood smears, but is not easily identified via this approach. A suitable PCR test is available at some commercial laboratories.

## 8) Can *B. canis* be treated?

The disease is difficult to cure and there are no treatments currently licensed for use in dogs on the UK market, although a treatment licensed for use in cattle can be used to treat disease caused by *B. canis* in dogs. Treatment is aimed at reducing the level of parasites in the dogs' blood while supportive care may be given to reduce their clinical signs. However, despite such improvements, treated dogs may remain permanent carriers of the infection. The best treatment is prevention by treating regularly for ticks.

## 9) What should concerned dog owners do?

The best and most effective approach to prevent dogs becoming infected by *Babesia canis* is to regularly use an appropriate treatment to control ticks. This is a matter for each dog owner to pursue, and they should discuss the most appropriate treatment options with their private veterinary surgeon.

Dog owners should remain vigilant and consult a veterinary surgeon if disease signs, including lethargy, fever and anaemia (which might be indicated by pale gum colouration or (if caused by *Babesia*) production of noticeably dark coloured urine), develop.

## 10) How do we monitor ticks?

Public Health England (PHE) run a 'Tick Surveillance Scheme' which receives ticks found by members of the public, GPs, vets and those working with wildlife. If dog owners find a tick their pet they can send your specimen to PHE for identification. E-mail [tick@phe.gov.uk](mailto:tick@phe.gov.uk) , or visit <https://www.gov.uk/guidance/tick-surveillance-scheme> to find out more.

## 11) How prevalent are tick-borne diseases in the UK?

Ticks are capable of transmitting several diseases, not only *Babesia canis*, to several species, including humans, but *B.canis* has only ever been identified in dogs. Most of these diseases are not notifiable and therefore it is not possible to accurately determine the prevalence of such diseases. However, these are the first cases of *Babesia canis* reported in non-travelling dogs in the UK. Previous cases of *Babesia vogeli* have been identified in dogs in the past, while more recently *B. gibsoni* and *B. divergens* (the causative agent of red water fever in cattle) have been identified in other tick species (*Ixodes* sp).

## 12) What is the tick species involved?

The tick has been identified as *Dermacentor reticulatus*. This species is not widely distributed in the UK, although other small localised populations have been identified previously in GB – in Essex, Devon and Wales.

## 13) How long do ticks live?

Adults and larval stages may survive for several months but the adults, which must feed on a vertebrate host to survive, are most active in the spring, with a second peak of activity in the autumn through winter. The survival of immature species is not well understood in the UK environment.

## 14) Can ticks be controlled and how?

Regular acaricide treatment of animals is effective and safe. Environmental control of ticks is more difficult and involves vegetation management (eg selective grazing and

livestock or wildlife cordons) but long term widespread tick eradication would not be recommended due to the complexity and cost for the perceived benefits. Environmental use of acaricides is not allowed in the EU.

### **15) Can you get rid of ticks?**

There are safe and effective tick treatments available on the market for dogs. Environmental control is unlikely to be suitable for this particular species of tick – environmental use of acaricides is prohibited in the European Union.