



Lyme Disease Action

www.LymeDiseaseAction.org.uk

@LymeAction

**Lyme disease in the UK:
interactions and dependencies**

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What is Lyme Disease?

An infectious disease caused by the bacterium *Borrelia burgdorferi* – a Spirochaete;



Courtesy Klaus Eisendle

transmitted to humans by ticks;

treated with antibiotics.



Main players



Ticks

Adult female



Adult male



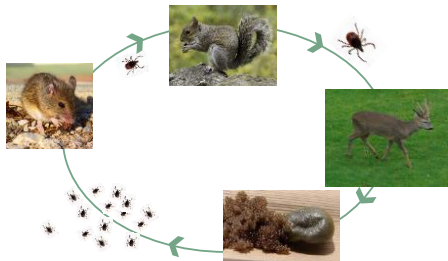
Nymph



Larva



Tick life cycle



Not just one sort of tick

- Ixodes ricinus* – sheep tick
- I. hexagonus* – hedgehog tick
- I. canisuga* – English dog or fox tick

- I. trangulicepts* – vole tick
- I. uriae* - seabird tick

- Dermacentor reticulatus* – ornate cow tick
- Haemaphysalis punctata* - coastal red tick
- Rhipicephalus sanguineus* - brown dog tick
- Argas vespertilionis* - bat tick

Jameson et al. 2011 Tick Surveillance in Great Britain
Hubbard et al 1998 Distribution of *Borrelia burgdorferi* s.l. spirochaete DNA in British ticks

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Not just one host

Couper et al 2010 Prevalence of Borrelia infection in ticks from wildlife in south-west England.

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Not just one Borrelia

Borrelia burgdorferi sensu lato
Borrelia burgdorferi sensu stricto
Borrelia afzelii
Borrelia garinii
Borrelia valaisiana
Borrelia miyamotoi

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Not just one Borrelia

B. afzelii S England more closely related to France, Scotland to Latvia

Vollmer et al 2011 Host migration impacts on the phylogeography of LD spirochaete in Europe

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Borrelia, vectors & hosts

Borrelia burgdorferi sensu lato
Borrelia burgdorferi sensu stricto
Borrelia afzelii
Borrelia garinii
Borrelia valaisiana
Borrelia miyamotoi

Sheep tick
Fox tick
Hedgehog tick

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Borrelia

Dr Richard Bingham, The University of Huddersfield

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Borrelia interactions

Negative control band
Serum control
Conjugate control
Cut off control
Separation line

p83
p58
p43
p39
p30
OspC
p21
Osp17
DbpA
p14
VisE

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Dependent relationships

www.information.anywhere

Research

GP

microbiologist

consultant

Public Health England

Department of Health

NICE National Institute for Health and Care Excellence

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Striving for the prevention and treatment of Lyme disease and associated tick-borne diseases