

Lyme disease overview

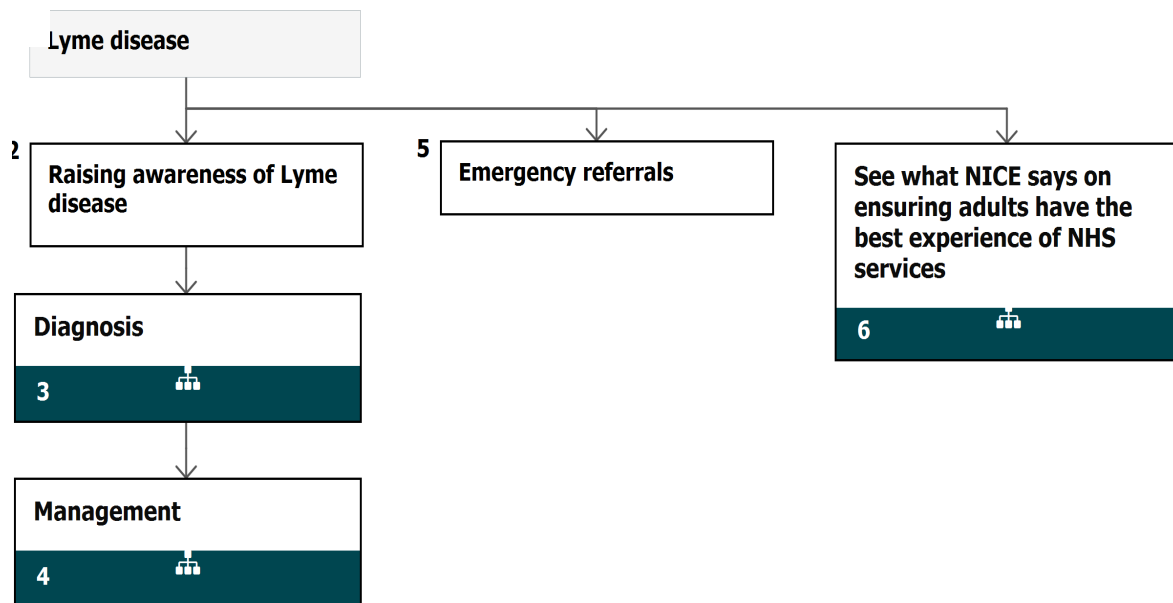
NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

<http://pathways.nice.org.uk/pathways/lyme-disease>

NICE Pathway last updated: 17 October 2018

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Lyme disease

No additional information

2 Raising awareness of Lyme disease

Be aware that:

- the bacteria that cause Lyme disease are transmitted by the bite of an infected tick
- ticks are mainly found in grassy and wooded areas, including urban gardens and parks
- tick bites may not always be noticed
- infected ticks are found throughout the UK and Ireland, and although some areas appear to have a higher prevalence of infected ticks, prevalence data are incomplete
- particularly high-risk areas are the South of England and Scottish Highlands but infection can occur in many areas
- Lyme disease may be more prevalent in parts of central, eastern and northern Europe (including Scandinavia) and parts of Asia, the US and Canada.

Be aware that most tick bites do not transmit Lyme disease and that prompt, correct removal of the tick reduces the risk of transmission.

Give people advice about:

- where ticks are commonly found (such as grassy and wooded areas, including urban gardens and parks)
- the importance of prompt, correct tick removal and how to do this (see Public Health England's [information on removing ticks](#))
- covering exposed skin and using insect repellents that protect against ticks
- how to check themselves and their children for ticks on the skin
- sources of information on Lyme disease, such as [Public Health England](#), and organisations providing information and support, such as patient charities.

NICE has written information for the public on [Lyme disease](#).

Why we made the recommendations

See information on [raising awareness of Lyme disease \[See page 7\]](#).

3 **Diagnosis**

[See Lyme disease / Diagnosing Lyme disease](#)

4 **Management**

[See Lyme disease / Managing Lyme disease](#)

5 **Emergency referrals**

Follow usual clinical practice for emergency referrals, for example, in people with symptoms that suggest central nervous system infection, uveitis or cardiac complications such as complete heart block, even if Lyme disease is suspected.

Why we made the recommendation

See information on [emergency referrals](#) [See page 7].

6 **See what NICE says on ensuring adults have the best experience of NHS services**

[See Patient experience in adult NHS services](#)

Specialist advice on diagnosing and managing Lyme disease in children and young people

The type of problems that children with Lyme disease may develop, such as arthritis or facial palsy, are uncommon and the committee decided to recommend that management for children and young people with presentations other than uncomplicated erythema migrans (a single lesion with no other symptoms) should be discussed with a specialist to ensure the diagnosis is correct and for advice on antibiotic treatment.

How the recommendation might affect practice

The occurrence of symptoms such as arthritis and facial palsy are uncommon in children, so it is expected that most children with these symptoms are already seen in specialist services; therefore, this recommendation should not result in a large change of practice.

Full details of the evidence and the committee's discussion are in [evidence review D: management of erythema migrans](#).

Antibiotic treatment for Lyme disease in adults and young people (aged 12 and over) according to symptoms ^a

Symptoms	Treatment	First alternative	Second alternative
Lyme disease without focal symptoms			
Erythema migrans and/or non-focal symptoms	Oral doxycycline: 100 mg twice per day or 200 mg once per day for 21 days	Oral amoxicillin: 1 g 3 times per day for 21 days	Oral azithromycin ^b : 500 mg daily for 17 days
Lyme disease with focal symptoms			

Lyme disease affecting the cranial nerves or peripheral nervous system	Oral doxycycline: 100 mg twice per day or 200 mg once per day for 21 days	Oral amoxicillin: 1 g 3 times per day for 21 days	
Lyme disease affecting the central nervous system	Intravenous ceftriaxone: 2 g twice per day or 4 g once per day for 21 days (when an oral switch is being considered, use doxycycline)	Oral doxycycline: 200 mg twice per day or 400 mg once per day for 21 days	
Lyme disease arthritis	Oral doxycycline: 100 mg twice per day or 200 mg once per day for 28 days	Oral amoxicillin: 1 g 3 times per day for 28 days	Intravenous ceftriaxone: 2 g once per day for 28 days
Acrodermatitis chronica atrophicans			
Lyme carditis ^b	Oral doxycycline: 100 mg twice per day or 200 mg once per day for 21 days	Intravenous ceftriaxone: 2 g once per day for 21 days	
Lyme carditis and haemodynamically unstable ^b	Intravenous ceftriaxone: 2 g once per day for 21 days (when an oral switch is being considered, use doxycycline)		

^a For Lyme disease suspected during pregnancy, use appropriate antibiotics for stage of pregnancy.

^b Do not use azithromycin to treat people with cardiac abnormalities associated with Lyme disease because of its effect on QT interval.

Raising awareness of Lyme disease

The committee agreed that raising awareness is important to improve diagnosis and management of Lyme disease. Based on the committee's knowledge and experience, and some limited evidence on UK incidence, they agreed to highlight how infection occurs, typical tick habitats and areas of higher risk. This may help to guide healthcare professionals, for example, in recognising the possibility of Lyme disease when a person is unaware that they have been bitten by a tick or in areas where ticks are found but Lyme disease is not highly prevalent.

The committee also agreed that people who may have been exposed to ticks should be given advice to help avoid Lyme disease in the future.

How the recommendations might affect practice

The recommendations aim to improve awareness of Lyme disease, to promote early investigation and treatment, and to optimise outcomes in people with Lyme disease. They will change current practice by prompting healthcare professionals to think about the possibility of Lyme disease. This may result in an increase in testing and treatment, but the cost of this is likely to be balanced by the benefits of improved recognition and early treatment.

Full details of the evidence and the committee's discussion are in [evidence review A: awareness of Lyme disease](#).

Emergency referrals

Lyme disease will not usually be considered as the most likely cause when people present with neurological and other symptoms that need emergency referral (such as central nervous system infection or heart block). However, the committee wanted to emphasise that if the history and physical findings suggest Lyme disease, usual clinical practice is still appropriate, because people may need additional supportive treatment from specialist services as well as appropriate antibiotics.

How the recommendation might affect practice

People who are systemically unwell with neurological or cardiac disease are referred to hospital for urgent treatment, so this recommendation should not lead to a change in existing practice.

Full details of the evidence and the committee's discussion are in [evidence review D: management of erythema migrans](#).

ELISA

enzyme-linked immunosorbent assay

UKAS

UK accreditation service

Sources

[Lyme disease](#) (2018) NICE guideline NG95

Your responsibility**Guidelines**

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should [assess and reduce the environmental impact of implementing NICE recommendations](#) wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.