Ashford and St. Peter's Hospitals
NHS Foundation Trust

Guideline for the management of Lyme Disease in Paediatrics

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Guideline History		
Date	**Comments**	**Approved By**
May 2018	Guideline created by Dr Fiona MacCarthy	
March 2022	Guideline updated	

Patients first • Personal responsibility • Passion for excellence • Pride in our team

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Guideline for the management of Lyme Disease in Paediatrics

Introduction

Lyme disease is caused by a bacteria group called ***Borrelia Burgdorferi***, transmitted by the bite of an infected tick. The tick bite may not always be noticed and most tick bites do not transmit the disease.

These ticks are mainly found in grassy parkland or wooded areas, and can occur anywhere in the UK. There is a particular high prevalence in South England and Scottish Highlands. This means it is relevant to our clinical practice and within the paediatric population presenting to St Peter's hospital.

Diagnosis

Lyme disease may present first with a rash called ***erythema migrans***.

This is a circular red rash that is increasing in size and may have a central clearing. It is not usually itchy, hot or painful.

It is usually visible from 1-4 weeks (but can appear 3 days – 3 months) after tick bite and can last for several weeks. It usually occurs at the site of a tick bite.

Please be aware that a rash that is not erythema migrans can develop as a local reaction to a tick bite, either caused by an inflammatory reaction or infection with a common skin pathogen. This local reaction is more likely to be hot, itchy and painful compared to erythema migrans.

When should a diagnosis of Lyme Disease be considered?

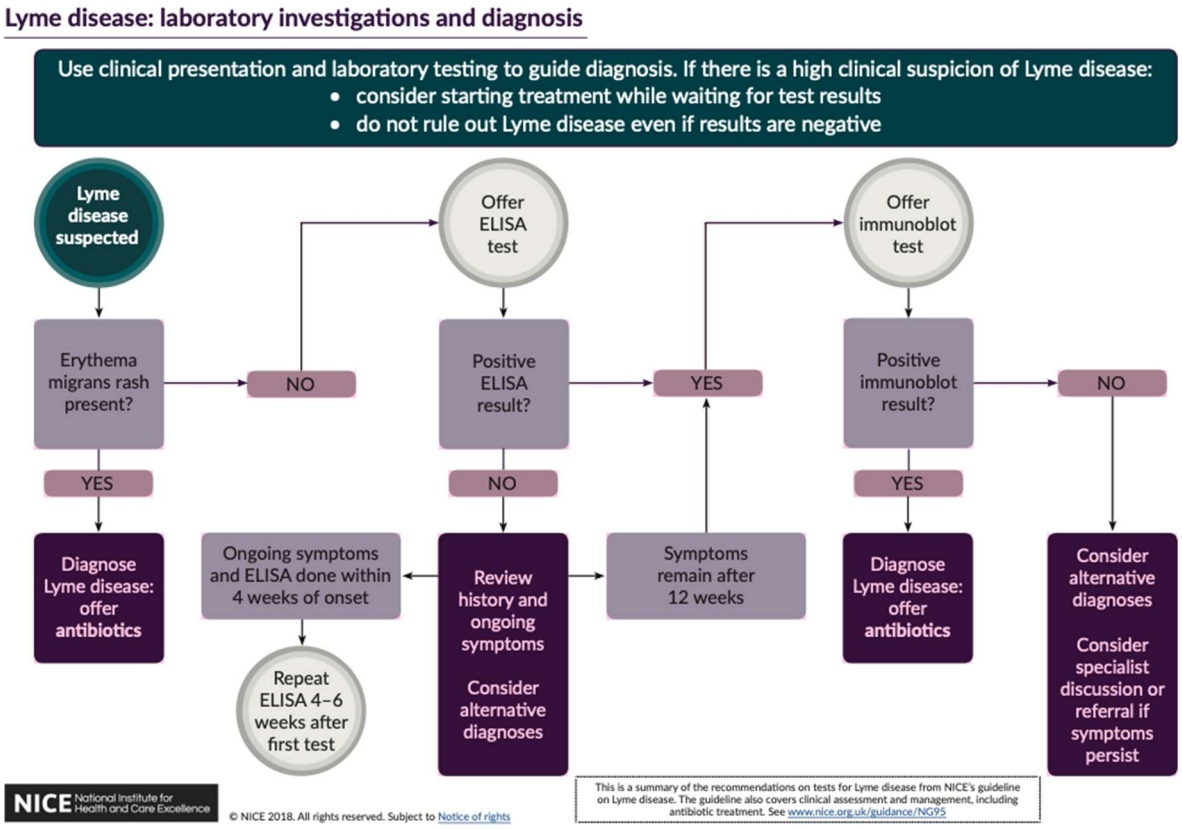
- Lyme Disease may be an uncommon cause for: fever and sweats, swollen glands, malaise, neck pain, joint stiffness, muscle aches, paraesthesia.
- Lyme Disease may cause:
    - Neurological symptoms
    - Inflammatory arthritis

- Cardiac problems such as heart block and pericarditis
- Eye symptoms such as uveitis and keratitis
- Rashes such as *acrodermaitits chronica atrophicans* (late stage for untreated borrelial infection, causing unilateral red/purple discolouration to extensor parts of limbs, more common in older people but can affect children)

- Use a combination of clinical presentation and laboratory testing to guide diagnosis.
- Do not rule out diagnosis if tests negative but there is a high level of clinical suspicion.

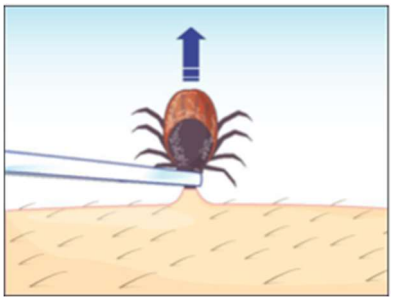
Testing

If there is a high clinical suspicious of Lyme disease, consider starting treatment while waiting for test results and do not rule out Lyme disease even if results are negative.



Tests used to support diagnosis should be carried out at UK accreditation service (UKAS) accredited laboratories.

Management

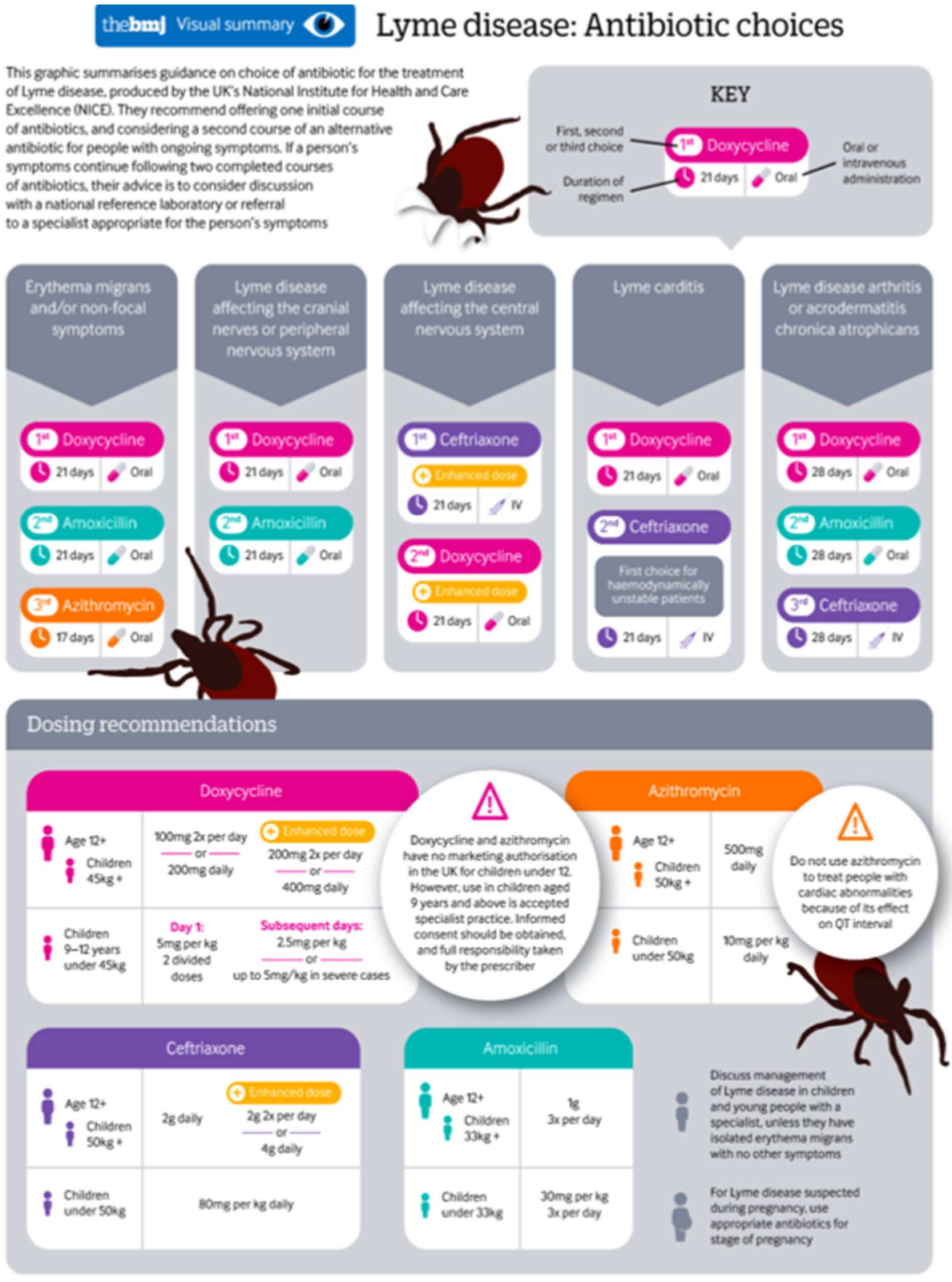


- Transmission risk is reduced by prompt and quick removal of the tick.
    - Special tick removal lancets (from the vet) may be found in Paediatric A+E (next to instillagel in cupboard).
    - Otherwise with fine tipped tweezers, grasp as close to the skin as possible whilst removing, pulling upwards slowly and firmly. Public Health England's information on removing ticks:

      https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057568/Be_tick_aware_toolkit.pdf
    - Once removed, clean the skin with antiseptic and ask parent to keep an eye on this area over the next few weeks.
- Consider discussion with microbiology specialist for further advice.
- If concern that there are ongoing symptoms after the first course of antibiotics, a second course of antibiotics can be considered after discussion with Microbiologist.

Useful Explanation for parents:

- Tell parents that the tests for Lyme disease have limitations. Both false negatives and positives can occur.
- The accuracy of the test is reduced if; done too early (before antibodies have developed) or if a person has reduced immunity.
- Explain that ongoing symptoms despite antibiotics does not mean that they have ongoing disease, symptoms of Lyme disease may take months or years to resolve. Some symptoms may be the result of permanent damage from infection.


thebmj Visual summary
Lyme disease: Antibiotic choices
This graphic summarises guidance on choice of antibiotic for the treatment of Lyme disease, produced by the UK's National Institute for Health and Care Excellence (NICE). They recommend offering one initial course of antibiotics, and considering a second course of an alternative antibiotic for people with ongoing symptoms. If a person's symptoms continue following two completed courses of antibiotics, their advice is to consider discussion with a national reference laboratory or referral to a specialist appropriate for the person's symptoms
KEY
First, second or third choice
1st Doxycycline
21 days
Oral
Duration of regimen
Oral or intravenous administration
Erythema migrans and/or non-focal symptoms
1st Doxycycline 21 days Oral
2nd Amoxicillin 21 days Oral
3rd Azithromycin 17 days Oral
Lyme disease affecting the cranial nerves or peripheral nervous system
1st Doxycycline 21 days Oral
2nd Amoxicillin 21 days Oral
Lyme disease affecting the central nervous system
1st Ceftriaxone Enhanced dose 21 days IV
2nd Doxycycline Enhanced dose 21 days Oral
Lyme carditis
1st Doxycycline 21 days Oral
2nd Ceftriaxone
First choice for haemodynamically unstable patients
21 days IV
Lyme disease arthritis or acrodermatitis chronica atrophicans
1st Doxycycline 28 days Oral
2nd Amoxicillin 28 days Oral
3rd Ceftriaxone 28 days IV
Dosing recommendations
Doxycycline
Age 12+ Children 45kg +
100mg 2x per day or 200mg daily
Enhanced dose 200mg 2x per day or 400mg daily
Children 9–12 years under 45kg
Day 1: 5mg per kg 2 divided doses
Subsequent days: 2.5mg per kg or up to 5mg/kg in severe cases
Doxycycline and azithromycin have no marketing authorisation in the UK for children under 12. However, use in children aged 9 years and above is accepted specialist practice. Informed consent should be obtained, and full responsibility taken by the prescriber
Azithromycin
Age 12+ Children 50kg +
500mg daily
Children under 50kg
10mg per kg daily
Do not use azithromycin to treat people with cardiac abnormalities because of its effect on QT interval
Ceftriaxone
Age 12+ Children 50kg +
2g daily
Enhanced dose 2g 2x per day or 4g daily
Children under 50kg
80mg per kg daily
Amoxicillin
Age 12+ Children 33kg +
1g 3x per day
Children under 33kg
30mg per kg 3x per day
Discuss management of Lyme disease in children and young people with a specialist, unless they have isolated erythema migrans with no other symptoms
For Lyme disease suspected during pregnancy, use appropriate antibiotics for stage of pregnancy

2. Supporting References

1. Lyme Disease NICU guidelines (updated Oct 2018) https://www.nice.org.uk/guidance/ng95
2. UK Health Security Agency. 'Be tick aware' toolkit. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057568/Be_tick_aware_toolkit.pdf
3. Lyme disease: summary of NICE guidance. Marina Cuickshank et al. BMJ (2018) 361:34-40. https://www.bmj.com/content/361/bmj.k1261
4. https://dermnetnz.org/topics/acrodermatitis-chronica-atrophicans

3.Supporting relevant trust guidelines

There are no relevant supporting trust guidelines on the management of Lyme Disease.

2. Guideline Governance

a. Scope

This guideline is relevant to all staff caring for all children from 0-18 years old across the emergency department, inpatient ward and outpatient department.

b. Purpose

i. This guidelines aims to facilitate a common approach to the management of children. At times deviation from the guideline may be necessary, this should be documented and is the responsibility of the attending consultant.

ii. This guideline is subject to regular review to ensure ongoing evidence based practice.

c. Duties and Responsibilities

All healthcare professionals responsible for the care of all children 0-18years should be aware of practice according to this guideline.

d. Approval and Ratification

This guideline will be approved and ratified by the Paediatric Guidelines Group.

e. Dissemination and Implementation

i. This guideline will be uploaded to the trust intranet 'Paediatric Guidelines' page and thus available for common use.
ii. This guideline will be shared as part of ongoing education within the Paediatric Department for both medical and nursing staff.
iii. All members of staff are invited to attend and give comments on the guideline as part of the ratification process.

f. Review and Revision Arrangements

a. This policy will be reviewed on a 3 yearly basis by the appropriate persons.
b. If new information comes to light prior to the review date, an earlier review will be prompted.
c. Amendments to the document shall be clearly marked on the document control sheet and the updated version uploaded to the intranet. Minor amendments will be ratified through the Paediatric Guidelines Group. A minor amendment would consist of no major change in process, and includes but is not limited to, amendments to documents within the appendices.

g. Equality Impact Assessment

Background • Who was involved in the Equality Impact Assessment
Dr Charlotte Card, Update Author and Supervising Consultant Dr Fiona MacCarthy
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)
All groups of staff and patients were taken into consideration and there is no bias towards or against any particular group.
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
There is no evidence of discrimination.
Conclusion • Provide a summary of the overall conclusions
There is no evidence of discrimination.
Recommendations • State recommended changes to the proposed policy as a result of the impact assessment • Where it has not been possible to amend the policy, provide the detail of any actions that have been identified • Describe the plans for reviewing the assessment
This guideline is appropriate for use.

h. Document Checklist

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document: Guideline for the management of Lyme Disease in Paediatrics

Policy (document) Author: Dr Charlotte Card

Executive Director: N/A

		Yes/No/ Unsure/NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	**Y**	
	Is it clear whether the document is a guideline, policy, protocol or standard?	**Y**	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	**Y**	
	Is the purpose of the document clear?	**Y**	
	Are the intended outcomes described?	**Y**	
	Are the statements clear and unambiguous?	**Y**	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	**N/A**	
	Who was engaged in a review of the document (list committees/ individuals)?		**Dr Fiona MacCarthy**
	Has the policy template been followed (i.e. is the format correct)?	**Y**	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	**Y**	

		Yes/No/ Unsure/NA	Comments
	Are local/organisational supporting documents referenced?	**N/A**	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	**N**	
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	**N/A**	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	**Y**	
	Does the plan include the necessary training/support to ensure compliance?	**N/A**	
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**No**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**Y**	
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**Y**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	Y	

Committee Approval (Paediatric Guidelines Group)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair	**Dr Claire Mitchell**	**Date**	**31/03/2022**
Ratification by Management Executive (if appropriate)			
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner			
Date: n/a			