

Attachment 1: Annex 1–4

Annex 1: Patient information on what to do in the event of a tick bite

1. Remove the tick as quickly as possible.

Special tick tweezers or tick cards are the best way to do this.

Pull or push the tick slowly and patiently out of the skin – without twisting or pre-treating it with oil or glue. Avoid squishing the body.

If some of the suction organ remains in the skin (often misinterpreted as the “head”), you can remove it with a sterile needle or a curette, or have it removed by a physician. If the suction organ remains in the skin, there is no danger of the *Borrelia* being transferred.

2. Carefully examine your body and especially the heads of children for more ticks.

3. Observe the skin near the site of the bite for 6 weeks. A redness that appears directly after the bite as a result of the tick’s saliva will disappear within several days. If the redness **reappears** or if the original redness enlarges to ≥ 5 cm, be sure to consult a doctor. This can be a sign of **erythema migrans (migrating rash)**, the early manifestation of Lyme disease.

4. When there is a typical migrating rash near the site of the bite, it should be treated with antibiotics, preferably with doxycycline (for children aged 9 and up) or amoxicillin, even when no blood test has been carried out or if no antibodies have been detected.

5. The dissemination of the *Borrelia* through the blood – even without a reddening of the skin – is noticeable by a flu-like feeling without respiratory symptoms. This may be a precursor to organ disease, e.g. of the joints or the nervous system. Consult a physician who will decide whether or not a blood screening for *Borrelia* antibodies is necessary.

6. Early-stage Lyme disease can be completely cured when antibiotic treatment is carried out in line with the guidelines. This also prevents late manifestations.

7. It is not necessary to examine the tick for *Borrelia* since a positive detection does not confirm whether the *Borrelia* were indeed transferred to the skin and whether, in the case of a transmission, this will lead to an infection. A negative result does not exclude the possibility of a transmission.

8. Only a small proportion of the people infected with *Borrelia* become ill! This is why a prophylactic treatment with oral antibiotics is not recommended.

Annex 2: National and international guidelines on Lyme borreliosis

AWMF Guideline of the German Dermatology Society, Working Group for Dermatological Infectiology; Cutaneous Manifestations of Lyme Borreliosis

http://www.derma.de/fileadmin/derma/pdfs/II_kutane_lyme_borreliose.pdf

AWMF Guideline of the German Society of Neurology DGN – Neuroborreliosis

http://www.awmf.org/uploads/tx_szleitlinien/030-071I_S1_Neuroborreliose_2012.pdf

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Deutsche Borreliosis Society 2011 Guidelines for the Diagnosis and Treatment of Lyme Borreliosis <http://www.borreliose-gesellschaft.de/Texte/Leitlinien.pdf>

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Attachement 1 to:Hofmann H, Fingerle V, Hunfeld KP, Huppertz HI, Krause A, Rauer S, Ruf B, Consensus group. Cutaneous Lyme borreliosis: Guideline of the German Dermatology Society. GMS Ger Med Sci. 2017;15:Doc14. DOI: [10.3205/000255](https://doi.org/10.3205/000255)

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<http://www.kiza.nl/sites/default/files/images/Richtlijn%20lymeziekte%20definitief%2018%20juli%202013.pdf>

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Annex 3: Overview of treatment recommendations for cutaneous Lyme borreliosis in international guidelines

Guideline / treatment recommendation	Erythema migrans	Early disseminated form (without neurological manifestations)	Acrodermatitis chronica atrophicans (ACA)
USA IDSA Wormser et al. 2006	Doxycycline 100 mg 2x day or Amoxicillin 500 mg 3x day or Cefuroxime axetil 500 mg 2x day or Clarithromycin 500 mg 2x day or Erythromycin 4 x 500 mg /kg Duration 14–21 days or Azithromycin 500 mg/daily Duration 7–10 days	Doxycycline 100 mg 2x day or Amoxicillin 500 mg 3x day or Cefuroxime axetil 500 mg 2x day Duration 14–21 days	Doxycycline 100 mg 2x day or Amoxicillin 500 mg 3x day or Cefuroxime axetil 500 mg 2x day Duration 14–28 days
Germany AWMF S1 Hofmann et al. 2009	Doxycycline 100 mg 2x day or Amoxicillin 500–1000 mg 3x day or Cefuroxime axetil 500 mg 2x day Duration 14–21 days or Azithromycin 250 mg 2x day Duration 5–10 days		Doxycycline 100 mg 2x day 28 days or Ceftriaxone 2g/day or Cefotaxime 2g 3x day or Penicillin G 20x 10 ⁶ U/day Duration 14–21 days
France Chidiac et al. 2006	Amoxicillin 500 mg 3x day or Doxycycline 100 mg 2x day or Cefuroxime axetil 500 mg 2x day Duration 14–21 days or Azithromycin 500 mg/day Duration 10 days	Doxycycline 200 mg/day or Amoxicillin 1g/d 3x day or Ceftriaxone 2g/day Duration 14–21 days	Doxycycline 200 mg/day Duration 28 days or Ceftriaxone 2g/day Duration 14 days

Guideline / treatment recommendation	Erythema migrans	Early disseminated form (without neurological manifestations)	Acrodermatitis chronica atrophicans (ACA)
Netherlands Steensma et al. 2004	Doxycycline 100 mg 2x day Duration 10 days or Amoxicillin 500 mg 3x day Duration 14 days or Azithromycin 500 mg/day Duration 5 days	Doxycycline 100 mg 2x day Duration 21 days or Ceftriaxone 2g/day Duration 14 days	Doxycycline 100 mg 2x day (30 days)
Poland Flisiak and Pancewicz 2008	Amoxicillin 500 mg 3x day or Doxycycline 100 mg 2x day or Cefuroxime axetil 500 mg 2x day Duration 14–21 days or Azithromycin 500 mg/day Duration 7–10 days or Clarithromycin 500 mg 2x day or Penicillin V 1000 mg 3x day Duration 14–21 days	-	Amoxicillin 500–1000 mg 3x day or Doxycycline 100 mg 2x day or Ceftriaxone 2/day or Cefotaxime 2g 3x day or Penicillin G 3–4 x10 ⁶ U 4x day Duration 14–28 days
Finland Oksi et al. 2008	Amoxicillin 500–1000 mg 3x day or Doxycycline 100 mg 2x day or Cefuroxime axetil 500 mg 2x day Duration 14 days or Azithromycin 500 mg/day Duration 10 days	-	Ceftriaxone 2g/day Duration 14–21 days or Amoxicillin 500 mg 3x day or Doxycycline 100 mg 2x day Duration 1–2 months

Guideline / treatment recommendation	Erythema migrans	Early disseminated form (without neurological manifestations)	Acrodermatitis chronica atrophicans (ACA)
Norway Ljostad and Mygland 2009	Doxycycline 100 mg 2x day or 200 mg/day or Amoxicillin 500 mg 3x day Duration 14 days	Doxycycline 100 mg 2x day or 200 mg/day Duration 14 days	Doxycycline 200mg/day or 100mg 2x day Duration 20 days
Switzerland Evison et al. 2006	Doxycycline 100 mg 2x day Duration 10 days or Amoxicillin 500 mg 3x day or Cefuroxime axetil 500 mg 2x day or Clarithromycin 500 mg 2x day Duration 14–21 days or Azithromycin 500 mg/day Duration 7–10 days		-
2011 Guideline of the Germany Borreliosis Society	Doxycycline 400 mg/d or Amoxicillin 3000–6000 mg/d or Cefuroxime 2x 500 mg/d or Clarithromycin 500–1000 mg/d or Azithromycin 500 mg/ 3–4x/w Duration at least 4 weeks	Ceftriaxone 2g/d iv or Cefotaxime 2–3x 4g/d iv or Minocycline 200mg/d p o Duration Change antibiotic after 4 weeks if ineffective after clinical course	

Guideline / treatment recommendation	Erythema migrans	Early disseminated form (without neurological manifestations)	Acrodermatitis chronica atrophicans (ACA)
<p>USA ILADS 2014</p>	<p>Duration of application 10 to 21 days or duration of application 4–6 weeks (preference) Amoxicillin 1500–2000 mg/d children: 50 mg/d distributed over 3 doses, max. 1500 mg Cefuroxime 2x 500 mg/d children: 20–30 mg/d distributed over 2 doses, max. 1000 mg Doxycycline 2x 100 mg children over 8: 4 mg/d distributed over 2 doses, max. 200 mg Azithromycin 10 mg/kg on day 1, thereafter 5–10mg/kg/d max. 500 mg/d If persists: increase dosage as needed, possibly also combined with antibiotics that work intracellularly. Repeat the 4–6 week treatment if symptoms persist, like under Lyme arthritis, ACA, late-stage neuroborreliosis.</p>		<p>If symptoms recur, or progress after DD, repeat antibiotic treatment* with new alternative antibiotic** or combination therapy* possibly also i.m. penicillin G 1.2–3.6 units/week – or iv. Ceftriaxone 2g/d - Tetracycline: 1000–1500 mg distributed over 3–4 doses - (Cefotaxime) **Note: ILADS stresses that currently no fixed treatment schemes have been established as a result of a lack of evidence. Duration and dosage depend on, among other things, severity of the illness and response to the treatment.</p>
<p>Recommendations of the Commission for Pharmacotherapy of the German Society of Rheumatology (DGRh) Gaubitz M, et al. Z Rheumatol 2014; 73: 469-474.</p>	<p>Doxycycline 100 mg 2x daily p.o. or 200 mg 1xd daily p.o. or Amoxicillin 3 to 4 x 500–1000 mg or Cefuroxime 2x daily 500 mg p.o. Duration 10–21 days or Azithromycin 2x 500 mg p.o. day 1, then 1x 500 mg p.o. Duration 5 days</p>		<p>Doxycycline 100 mg 2x daily p.o. or 200 mg 1xd daily p.o. or Amoxicillin 3 x 500–1000 mg or Ceftriaxone 1x daily 2 g i.v. Duration 21 (14–30) days</p>

Annex 4: Legal regulations

Reporting obligations

In Germany there are no general disease or pathogen-specific reporting obligations in accordance with the infection protection law (IfSG).

However, in the **states of Bavaria, Berlin, Brandenburg, Mecklenburg West Pomerania, Rhineland Palatinate, Saarland, Saxony, Saxony-Anhalt and Thuringia** there are additional ordinances that supplement the infection protection law. According to these state ordinances, the respective health departments must be informed when a person (unnamed) falls ill with or dies from Lyme borreliosis in the form of an erythema migrans, an acute case of neuroborreliosis or an acute case of Lyme arthritis.

http://www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber_LymeBorreliose.html

Work-related illness

Reasonable suspicion that the Lyme borreliosis could be a work-related illness BK No. 3102 must be reported immediately to the accident insurance, e.g. the employer's liability insurance association, by the attending physician in accordance with Article 202 of the Social Security Code VII (SGB). The category of this work-related illness is: diseases transmitted from animals to humans. As part of this process of determination, the accident insurance will order or carry out the necessary work-related and medical examinations. The professions most at risk include forestry workers, gardeners, agriculturalists and hunters [Triebig G, Kentner M, Schiele R, Hrsg. Arbeitsmedizin, 2. Auflage. Stuttgart: Gentner-Verlag; 2008.]