

Bilaga 3 Exkluderade studier samt huvudorsak till exklusion

Första författare, år	Exklusionsorsak(er)
Andrzejewski, 2008 [1]	Alla får 4-veckors behandling (saknar jämförelsegrupp)
Arnez, 2002[2]	Jämför två olika antibiotika
Arnez, 1999 [3]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Asch, 1994 [4]	Rapporterar inte behandlingstidens längd
Barsic, 2000 [5]	Alla får mindre än 14-dagars behandling (saknar jämförelsegrupp)
Bennet, 2003 [6]	Ingen jämförelsegrupp
Bentas, 2000 [7]	Jämför inte effekt av behandlingstider
Berger, 1986 [8]	Kronisk EM. Varierande behandlingstider (10,15,21 dagar). Utfallsmått: upprepad behandling
Berger, 1988 [9]	Blandar olika antibiotika för samma patient
Berglund, 1995 [10]	Artrit, alla får minst 3-veckors behandling (saknar jämförelsegrupp)
Berglund, 2002 [11]	Saknas data om behandlingstidens längd
Blaauw, 1991[12]	Olika diagnoser, ingen kontrollerad studie
Boggs, 2011[13]	Fallrapport
Bojic,1993 [14]	Serbiska. Engelskt abstrakt ofullständigt
Borg, 2005 [15]	Alla får 10-14 dagars behandling (saknar jämförelsegrupp)
Breier, 1996 [16]	Alla får 21-dagars behandling (kontrollgrupp saknas)
Cameron, 2008 [17]	Kriterier för diagnostik av neuroborrelios och borreliaartrit följer inte svenska rekommendationer
Caperton, 1990 [18]	Placebo eller 14-dagars behandling
Cerar, 2010 [19]	Alla får 15-dagars behandling (saknar jämförelsegrupp)
Cimperman, 1999 [20]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Clarissou, 2009 [21]	Saknar jämförelsegrupp
Culp, 1987 [22]	Alla får 4-veckors behandling (saknar jämförelsegrupp)
Cunha, 2000 [23]	Letter
Dattwyler, 1996 [24]	Alla får 21-dagars behandling (saknar jämförelsegrupp)
Dattwyler, 1987 [25]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Dattwyler, 1988 [26]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Dattwyler, 1989 [27]	Review
Dattwyler, 1997 [28]	Jämför olika antibiotika
Dattwyler, 1990 [29]	Alla får 21-dagars behandling (saknar jämförelsegrupp)
Dattwyler, 2005 [30]	Kriterier för diagnostik ej enligt svenska rekommendationer
De Munter, 2002 [31]	Rekommendationer

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Donta, 1997 [32]	Ej kontrollerad, alla får minst en månads behandling (saknar jämförelsegrupp)
Dotevall, 2000 [33]	Kommentar
Dotevall, 1988 [34]	Ej relevant* studiedesign, fallserie
Dotevall, 1999 [35]	Data inte baserade på behandlingstidens längd
Duszczuk, 2003 [36]	Ej relevant frågeställning
Duszczuk, 2001 [37]	Undersöker inte effekt av behandlingstid
Eppes, 2001 [38]	Review
Eppes, 2002 [39]	Alla får 20-dagars behandling (saknar jämförelsegrupp)
Fallon, 1999 [40]	Studiedesign ej jämförande
Fallon, 2008 [41]	Kriterier för diagnostik av neuroborrelios och borreliaartrit följer inte svenska rekommendationer
Feder, 2006 [42]	Review
Feldman, 1995 [43]	Fallstudie
Felz, 1999 [44]	Fallserie
Galev, 2005 [45]	Enbart längre upprepad behandling
Gasser, 1990 [46]	Alla 5-veckors behandling (saknar jämförelsegrupp)
Gasser, 1996 [47]	Review
Gasser, 1996 [48]	Fallstudie
Genese, 1993 [49]	Komplikationer till antibiotikabehandling
Feder, 2006 [50]	Review
Halperin, 1989 [51]	Ingen behandlingsstudie
Halperin, 2012 [52]	Systematisk översikt. Kriterier för diagnostik av neuroborrelios och borreliaartrit följer inte svenska rekommendationer
Hansen, 1992 [53]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Hassler, 1998 [54]	Review
Hassler, 2004 [55]	Saknar jämförelsegrupp
Hassler, 1990 [56]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Hercogova, 1992 [57]	Rapporterar inte resultat utifrån behandlingstidens längd
Huisman, 2011 [58]	Ingen jämförelsegrupp
Kacinski, 2007 [59]	Ej relevant studiedesign, fallserie
Kaiser, 2004 [60]	Saknar jämförelsegrupp
Kalish, 2001 [61]	Oklar behandlingstidens längd
Kamper, 1991 [62]	Review
Kaplan, 2003 [63]	Kriterier för diagnostik av neuroborrelios och borreliaartrit följer inte svenska rekommendationer
Karaivanova, 1997 [64]	Rapporterar inte resultat utifrån behandlingstidens längd
Karkkonen, 2001 [65]	Data inte baserade på behandlingstidens längd
Karlsson, 1994 [66]	Alla får 14-dagars behandling (saknar jämförelsegrupp)

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Kellner, 2002 [67]	Ingen primärstudie
Klempner, 2001 [68]	Kriterier för diagnostik av neuroborrelios och borreliaartrit följer inte svenska rekommendationer
Kohlhepp, 1987 [69]	Ingen jämförande studie
Kohlhepp, 1989 [70]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Kowalski, 2011 [71]	Retrospektiv, kriterier för diagnostik ej enligt svenska rekommendationer
Krbkova, 1996 [72]	Rapporterar inte resultat utifrån behandlingstidens längd
Krupp, 2003 [73]	Kriterier för diagnostik av neuroborrelios och borreliaartrit följer inte svenska rekommendationer
Kuiper, 1994 [74]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Lapinski, 2003 [75]	Alla får 28-dagars behandling (saknar jämförelsegrupp)
Levin, 1997 [76]	Review
Lipsker, 2002 [77]	Rapporterar inte resultat utifrån behandlingstidens längd
Ljostad, 2008 [78]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Ljostad, 2010 [79]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Ljostad, 2008 [80]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Logigian, 1997 [81]	Review
Logigian, 1999 [82]	Alla får 30-dagars behandling (kontrollgrupp saknas)
Luft, 1996 [83]	Jämför två olika antibiotika
Luft, 1994 [84]	Review
Luft, 1989 [85]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Luger, 1995 [86]	Alla får 20-dagars behandling (saknar jämförelsegrupp)
Maraspin, 2002 [87]	Ej relevant population
Maraspin, 2002 [88]	Ej relevant population
Maraspin, 1995 [89]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Marques, 2009 [90]	Korrespondens
Marshall, 1999 [91]	Letter
Massarotti, 1992 [92]	Alla får högst 10 dagars behandling, inte kontrollerad, ej relevant studiedesign
Meier, 1998 [93]	fallrapport
Millner, 1996 [94]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Mullegger, 1991 [95]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Nadelman, 1992 [96]	Alla får 20-dagars behandling (saknar jämförelsegrupp)
Nadelman, 1993 [97]	Ingen behandlingsstudie
Neumann, 1987 [98]	Alla får upp till 14-dagarsbehandling (saknar jämförelsegrupp)
Nizic, 2012 [99]	Alla får 14 dagars behandling (saknar jämförelsegrupp)

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Nowakowski, 2000 [100]	Ej relevant studiedesign, fallserie
Nowakowski, 2003 [101]	Jämför inte effekt av behandlingstidens längd
Ogrinc, 2006 [102]	Alla får 28-dagars behandling (saknar jämförelsegrupp)
Oksi, 1998 [103]	Jämför två olika antibiotika
Oksi, 1999 [104]	Alla får långtidsbehandling (saknar jämförelsegrupp) inga biverkningar rapporteras
Pena, 1999 [105]	Diagnos oklar, uppföljning oklar
Pfister, 1989 [106]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Pfister, 1991 [107]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Picha, 2004 [108]	Ingen jämförelsegrupp
Plorer, 1993 [109]	Ej relevant utfallsmått
Plotkin, 1991 [110]	Review
Reid, 1998 [111]	Rapporterar inte behandlingstidens längd
Renaud, 2004 [112]	Rapporterar inte behandlingstidens längd
Rohacova, 1996 [113]	Ofullständigt utfallsmått
Rose, 1994 [114]	Artrit, alla minst 4-veckors behandling
Salazar, 1993 [115]	Rapporterar inte behandlingstidens längd
Schardt, 2004 [116]	Saknar jämförelsegrupp
Schoen, 1988 [117]	Generella rekommendationer
Selby, 2008 [118]	Review
Seltzer, 2000 [119]	Ingen behandlingstid anges
Shadick, 1994 [120]	Retrospektiv, kriterier för diagnostik oklar, terapi oklar
Sieper, 1998 [121]	Review
Sjowall, 2012 [122]	För kort uppföljningstid
Skogman, 2008 [123]	Alla får 10-14 dagars behandling (saknar jämförelsegrupp)
Skoldenberg, 1988 [124]	Alla får upp till 14-dagarsbehandling (saknar jämförelsegrupp)
Smith, 2002 [125]	Jämför inte behandlingstidens längd
Spathling, 1992 [126]	Ej relevant frågeställning
Spirin, 2012 [127]	Population: kronisk borreljos och multipel skleros
Steere, 1993 [128]	Review
Steere, 1987 [129]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Steere, 1987 [130]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Steere, 1985 [131]	20 dagars behandling mot placebo
Steere, 1994 [132]	Alla får mer än 14-dagars behandling (saknar jämförelsegrupp)
Steere, 1980 [133]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Steere, 1977 [134]	Fallserie
Stiernstedt, 1985 [135]	Ej relevant studiedesign, ingen behandlingsstudie
Stiernstedt, 1985 [136]	Alla får 14-dagarsbehandling eller mindre (saknar

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	jämförelsegrupp)
Stiernstedt, 1987 [137]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Stricker, 2011 [138]	Diagnos/minsta behandlingsgrupp 1-4 veckor ej specificerat
Stricker, 2009 [139]	Ej relevant frågeställning
Strickland, 1994 [140]	Ej relevant utfallsmått
Strle, 1993 [141]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Strle, 1992 [142]	Alla får behandling 10-14 dagar (saknar jämförelsegrupp)
Stupica, 2011 [143]	Alla får 15-dagars behandling (saknar jämförelsegrupp)
Suttorp-Schulten, 1993 [144]	Intraokular sjukdom, alla får 14-dagarsbehandling (saknar jämförelsegrupp)
Szantyr, 2009 [145]	Upprepad antibiotikabehandling
Szechinski, 1996 [146]	Ej relevanta antibiotika
Tea, 2012 [147]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Thorstrand, 2002 [148]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
Tory, 2010 [149]	Artrit diagnos, alla får 28 dagar, retrospektiv studie
Wahlberg, 1994 [150]	Ej relevant frågeställning
Valesova, 1996 [151]	Alla får 14-dagars behandling (saknar jämförelsegrupp)
Van Haaren, 1994 [152]	Ej relevant frågeställning
Vazquez, 2003 [153]	Ej relevant frågeställning
Weber, 1987 [154]	Alla får behandling 10-14 dagar (saknar jämförelsegrupp)
Weber, 1988 [155]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Weber, 1990 [156]	Alla får 14-dagarsbehandling eller mindre (saknar jämförelsegrupp)
Weber, 1993 [157]	Alla får 10-dagars behandling (saknar jämförelsegrupp)
White, 2012 [158]	Retrospektiv studie, fallserie
Wormser, 1990 [159]	Review
Wormser, 2002 [160]	Review
Worth, 1985 [161]	Rekommendationer
Vrethem, 2002 [162]	Rekommendationer
Zochling, 1996 [163]	Alla får 14-dagars behandling (saknar jämförelsegrupp)

*Ej relevant= ej relevant för våra frågeställningar

Referenslista exkluderade artiklar

1. Andrzejewski A, Wozniakowska-Gesicka T, Wisniewska-Ligier M. Arthritis in the course of *Borrelia burgdorferi* infection in children ORIGINAL (NON-ENGLISH) TITLE Zapalenie stawow w przebiegu zakazenia kretkiem *Borrelia burgdorferi* u dzieci. *Przeglad Pediatryczny* 2008;38:107-110.
2. Arnez M, Pleterski-Rigler D, Luznik-Bufon T, Ruzic-Sabljić E, Strle F. Solitary erythema migrans in children: comparison of treatment with azithromycin and phenoxymethylpenicillin. *Wien Klin Wochenschr* 2002;114:498-504.
3. Arnez M, Radsel-Medvescek A, Pleterski-Rigler D, Ruzic-Sabljić E, Strle F. Comparison of cefuroxime axetil and phenoxymethyl penicillin for the treatment of children with solitary erythema migrans. *Wien Klin Wochenschr* 1999;111:916-22.
4. Asch ES, Bujak DI, Weiss M, Peterson MG, Weinstein A. Lyme disease: an infectious and postinfectious syndrome. *J Rheumatol* 1994;21:454-61.
5. Barsic B, Maretic T, Majerus L, Strugar J. Comparison of azithromycin and doxycycline in the treatment of erythema migrans. *Infection* 2000;28:153-6.
6. Bennet L, Danell S, Berglund J. Clinical outcome of erythema migrans after treatment with phenoxymethyl penicillin. *Scand J Infect Dis* 2003;35:129-31.
7. Bentas W, Karch H, Huppertz HI. Lyme arthritis in children and adolescents: outcome 12 months after initiation of antibiotic therapy. *J Rheumatol* 2000;27:2025-30.
8. Berger BW. Treating erythema chronicum migrans of Lyme disease. *J Am Acad Dermatol* 1986;15:459-63.
9. Berger BW. Treatment of erythema chronicum migrans of Lyme disease. *Ann N Y Acad Sci* 1988;539:346-51.
10. Berglund J, Hansen BU, Eitrem R. Lyme arthritis--a common manifestation in a highly endemic area in Sweden. *J Rheumatol* 1995;22:695-701.
11. Berglund J, Stjernberg L, Ornstein K, Tykesson-Joelsson K, Walter H. 5-y Follow-up study of patients with neuroborreliosis. *Scand J Infect Dis* 2002;34:421-5.
12. Blaauw I, Nohlmans L, van den Berg-Loonen E, Rasker J, van der Linden S. Lyme arthritis in The Netherlands: a nationwide survey among rheumatologists. *J Rheumatol* 1991;18:1819-22.
13. Boggs SR, Cunnion KM, Raafat RH. Ceftriaxone-induced hemolysis in a child with Lyme arthritis: a case for antimicrobial stewardship. *Pediatrics* 2011;128:e1289-92.
14. Bojic I, Mijuskovic P. [Modern therapy of Lyme disease]. *Glas Srp Akad Nauka Med* 1993;257-62.
15. Borg R, Dotevall L, Hagberg L, Maraspin V, Lotric-Furlan S, Cimperman J, et al. Intravenous ceftriaxone compared with oral doxycycline for the treatment of Lyme neuroborreliosis. *Scand J Infect Dis* 2005;37:449-54.
16. Breier F, Kunz G, Klade H, Stanek G, Aberer E. Erythema migrans: three weeks treatment for prevention of late Lyme borreliosis. *Infection* 1996;24:69-72.

17. Cameron D. Severity of Lyme disease with persistent symptoms. Insights from a double-blind placebo-controlled clinical trial. *Minerva Med* 2008;99:489-96.
18. Caperton EM, Heim-Duthoy KL, Matzke GR, Peterson PK, Johnson RC. Ceftriaxone therapy of chronic inflammatory arthritis. A double-blind placebo controlled trial. *Arch Intern Med* 1990;150:1677-82.
19. Cerar D, Cerar T, Ruzic-Sabljić E, Wormser GP, Strle F. Subjective symptoms after treatment of early Lyme disease. *Am J Med* 2010;123:79-86.
20. Cimperman J, Maraspin V, Lotric-Furlan S, Ruzic-Sabljić E, Strle F. Lyme meningitis: a one-year follow up controlled study. *Wien Klin Wochenschr* 1999;111:961-3.
21. Clarissou J, Song A, Bernede C, Guillemot D, Dinh A, Ader F, et al. Efficacy of a long-term antibiotic treatment in patients with a chronic Tick Associated Poly-organic Syndrome (TAPOS). *Med Mal Infect* 2009;39:108-15.
22. Culp RW, Eichenfield AH, Davidson RS, Drummond DS, Christofersen MR, Goldsmith DP. Lyme arthritis in children. An orthopaedic perspective. *J Bone Joint Surg Am* 1987;69:96-9.
23. Cunha BA. Minocycline versus doxycycline in the treatment of Lyme neuroborreliosis. *Clin Infect Dis* 2000;30:237-8.
24. Dattwyler RJ, Grunwaldt E, Luft BJ. Clarithromycin in treatment of early Lyme disease: a pilot study. *Antimicrob Agents Chemother* 1996;40:468-9.
25. Dattwyler RJ, Halperin JJ, Pass H, Luft BJ. Ceftriaxone as effective therapy in refractory Lyme disease. *J Infect Dis* 1987;155:1322-5.
26. Dattwyler RJ, Halperin JJ, Volkman DJ, Luft BJ. Treatment of late Lyme borreliosis--randomised comparison of ceftriaxone and penicillin. *Lancet* 1988;1:1191-4.
27. Dattwyler RJ, Luft BJ. Antibiotic treatment of Lyme borreliosis. *Biomed Pharmacother* 1989;43:421-6.
28. Dattwyler RJ, Luft BJ, Kunkel MJ, Finkel MF, Wormser GP, Rush TJ, et al. Ceftriaxone compared with doxycycline for the treatment of acute disseminated Lyme disease. *N Engl J Med* 1997;337:289-94.
29. Dattwyler RJ, Volkman DJ, Conaty SM, Platkin SP, Luft BJ. Amoxicillin plus probenecid versus doxycycline for treatment of erythema migrans borreliosis. *Lancet* 1990;336:1404-6.
30. Dattwyler RJ, Wormser GP, Rush TJ, Finkel MF, Schoen RT, Grunwaldt E, et al. A comparison of two treatment regimens of ceftriaxone in late Lyme disease. *Wien Klin Wochenschr* 2005;117:393-7.
31. De Munter P, Peetermans W. Guidelines for the management and prevention of lyme-borreliosis ORIGINAL (NON-ENGLISH) TITLE Richtlijnen voor behandeling en preventie van lyme-borreliose. *Tijdschrift voor Geneeskunde* 2002;58:1559-1565.
32. Donta ST. Tetracycline therapy for chronic Lyme disease. *Clin Infect Dis* 1997;25 Suppl 1:S52-6.
33. Dotevail L, Hagberg L. Adverse effects of minocycline versus doxycycline in the treatment of lyme neuroborreliosis [6]. *Clinical Infectious Diseases* 2000;30:410-411.

34. Dotevall L, Alestig K, Hanner P, Norkrans G, Hagberg L. The use of doxycycline in nervous system *Borrelia burgdorferi* infection. *Scand J Infect Dis Suppl* 1988;53:74-9.
35. Dotevall L, Hagberg L. Successful oral doxycycline treatment of Lyme disease-associated facial palsy and meningitis. *Clin Infect Dis* 1999;28:569-74.
36. Duszczek E, Karney A, Kowalewska-Kantecka B, Gryglicka H. [Borreliosis in children - clinical manifestation, diagnosis and treatment]. *Med Wieku Rozwoj* 2003;7:49-56.
37. Duszczek E, Kowalik-Mikolajewska B. [Borrelia burgdorferi infection in children]. *Przegl Epidemiol* 2001;55:511-5.
38. Eppes SC. Lyme disease: Current therapies and prevention. *Infections in Medicine* 2001;18:388-395.
39. Eppes SC, Childs JA. Comparative study of cefuroxime axetil versus amoxicillin in children with early Lyme disease. *Pediatrics* 2002;109:1173-7.
40. Fallon BA, Tager F, Fein L, Liegner K, Keilp J, Weiss N, et al. Repeated antibiotic treatment in chronic Lyme disease. *Journal of Spirochetal and Tick-borne Diseases* 1999;6:94-102.
41. Fallon BA, Keilp JG, Corbera KM, Petkova E, Britton CB, Dwyer E, et al. A randomized, placebo-controlled trial of repeated IV antibiotic therapy for Lyme encephalopathy. *Neurology* 2008;70:992-1003.
42. Feder HM, Jr., Abeles M, Bernstein M, Whitaker-Worth D, Grant-Kels JM. Diagnosis, treatment, and prognosis of erythema migrans and Lyme arthritis. *Clin Dermatol* 2006;24:509-20.
43. Feldman RJ, Alcid DV, Boruchoff SE. Failure of prolonged azithromycin therapy in early Lyme disease. *Infectious Diseases in Clinical Practice* 1995;4:230-232.
44. Felz MW, Chandler FW, Jr., Oliver JH, Jr., Rahn DW, Schriefer ME. Solitary erythema migrans in Georgia and South Carolina. *Arch Dermatol* 1999;135:1317-26.
45. Galev A, Zvetkov V, Genov K. Pulse therapy with ceftriaxone on lyme neuroborreliosis. *Problems of Infectious and Parasitic Diseases* 2005;33:15-17.
46. Gasser R, Dusleag J. Oral treatment of late borreliosis with roxithromycin plus co-trimoxazole. *Lancet* 1990;336:1189-1190.
47. Gasser R, Eber B, Klein W, Seinost G, Grinschgl S, Sedaj B, et al. Treatment of borrelia-infection by macrolid-antibiotics ORIGINAL (NON-ENGLISH) TITLE Makrolid-antibiotika in der behandlung von Borrelia-infektion. *Medizinische Welt* 1996;47:285-289.
48. Gasser R, Reisinger E, Sedaj B, Horvarth R, Seinost G, Keplinger A, et al. Oral treatment of late Lyme borreliosis with a combination of roxithromycin and co-trimoxazole--a pilot study on 18 patients. *Acta Med Austriaca* 1996;23:99-101.
49. Genese C, Finelli L, Parkin W, Spitalny KC. Ceftriaxone-associated biliary complications of treatment of suspected disseminated Lyme disease - New Jersey, 1990-1992. *J Am Med Assoc* 1993;269:979-980.

50. M FJH, Abeles M, Bernstein M, Whitaker-Worth D, Grant-Kels JM. Diagnosis, treatment, and prognosis of erythema migrans and Lyme arthritis. *Clin Dermatol* 2006;24:509-520.
51. Halperin JJ. Abnormalities of the nervous system in Lyme disease: response to antimicrobial therapy. *Rev Infect Dis* 1989;11 Suppl 6:S1499-504.
52. Halperin JJ, Shapiro ED, Logigian E, Belman AL, Dotevall L, Wormser GP, et al. Practice parameter: treatment of nervous system Lyme disease (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2007;69:91-102.
53. Hansen K, Lebech AM. The clinical and epidemiological profile of Lyme neuroborreliosis in Denmark 1985-1990. A prospective study of 187 patients with *Borrelia burgdorferi* specific intrathecal antibody production. *Brain* 1992;115 (Pt 2):399-423.
54. Hassler D. [Understanding and properly treating Lyme borreliosis. Family physician study in the USA reveals large management deficits]. *Fortschr Med* 1998;116:45-6.
55. Hassler D, Schnauffer M, Ehrfeld H, Muller E. Disappearance of specific immune response after successful therapy of chronic Lyme borreliosis. *Int J Med Microbiol* 2004;293 Suppl 37:161-4.
56. Hassler D, Zoller L, Haude M, Hufnagel HD, Heinrich F, Sonntag HG. Cefotaxime versus penicillin in the late stage of Lyme disease--prospective, randomized therapeutic study. *Infection* 1990;18:16-20.
57. Hercogova J, Tomankova M, Bartak P. Contributions to the treatment of dermatologic manifestations of Lyme borreliosis. *Cutis* 1992;49:409-11.
58. Huismans B-D, Kleman W, Heyl S. Prolonged Antibiotic Therapy in PCR Confirmed Persistent Lyme Disease, Scientific Study. Booklet 2011:28.
59. Kacinski M, Zajac A, Skowronek-Bala B, Krocza S, Gergont A, Kubik A. CNS Lyme disease manifestation in children. *Przegl Lek* 2007;64 Suppl 3:38-40.
60. Kaiser R. [Clinical courses of acute and chronic neuroborreliosis following treatment with ceftriaxone]. *Nervenarzt* 2004;75:553-7.
61. Kalish RA, Kaplan RF, Taylor E, Jones-Woodward L, Workman K, Steere AC. Evaluation of study patients with Lyme disease, 10-20-year follow-up. *J Infect Dis* 2001;183:453-60.
62. Kamper C. Treatment of Lyme disease. *J Pediatr Health Care* 1991;5:99-105.
63. Kaplan RF, Trevino RP, Johnson GM, Levy L, Dornbush R, Hu LT, et al. Cognitive function in post-treatment Lyme disease: do additional antibiotics help? *Neurology* 2003;60:1916-22.
64. Karaivanova LA, Tsenova LG, Zarcheva VD. Early Lyme disease: Humoral immune status and treatment. *Clin Microbiol Infect* 1997;3:41-44.
65. Karkkonen K, Stiernstedt SH, Karlsson M. Follow-up of patients treated with oral doxycycline for Lyme neuroborreliosis. *Scand J Infect Dis* 2001;33:259-62.
66. Karlsson M, Hammers-Berggren S, Lindquist L, Stiernstedt G, Svenungsson B. Comparison of intravenous penicillin G and oral doxycycline for treatment of Lyme neuroborreliosis. *Neurology* 1994;44:1203-7.

67. Kellner H. [Repeat antibiotic therapy is ineffective in patients with persistent symptoms of Lyme borreliosis]. *Z Rheumatol* 2002;61:64-6.
68. Klempner MS, Hu LT, Evans J, Schmid CH, Johnson GM, Trevino RP, et al. Two controlled trials of antibiotic treatment in patients with persistent symptoms and a history of Lyme disease. *N Engl J Med* 2001;345:85-92.
69. Kohlhepp W, Mertens HG, Oschmann P, Rohrbach E. [Acute and chronic diseases in transmitted borreliosis by tick bite]. *Nervenarzt* 1987;58:557-63.
70. Kohlhepp W, Oschmann P, Mertens HG. Treatment of Lyme borreliosis. Randomized comparison of doxycycline and penicillin G. *J Neurol* 1989;236:464-9.
71. Kowalski TJ, Berth WL, Mathiason MA, Agger WA. Oral antibiotic treatment and long-term outcomes of Lyme facial nerve palsy. *Infection* 2011;39:239-45.
72. Krbkova L, Stanek G. Therapy of Lyme borreliosis in children. *Infection* 1996;24:170-3.
73. Krupp LB, Hyman LG, Grimson R, Coyle PK, Melville P, Ahnn S, et al. Study and treatment of post Lyme disease (STOP-LD): a randomized double masked clinical trial. *Neurology* 2003;60:1923-30.
74. Kuiper H, Cairo I, Van Dam A, De Jongh B, Ramselaar T, Spanjaard L, et al. Solitary erythema migrans: a clinical, laboratory and epidemiological study of 77 Dutch patients. *Br J Dermatol* 1994;130:466-72.
75. Lapinski TW, Grzeszczuk A, Prokopowicz D. [The recurrence of Lyme arthritis]. *Pol Merkur Lekarski* 2003;14:236-8.
76. Levin A. Antibiotic holds promise of ticking off Lyme disease. *Drug Topics* 1997;141:56+59.
77. Lipsker D, Antoni-Bach N, Hansmann Y, Jaulhac B. Long-term prognosis of patients treated for erythema migrans in France. *Br J Dermatol* 2002;146:872-6.
78. Ljostad U, Eikeland R, Midgard R. Oral doxycycline vs. IV ceftriaxone for European Lyme neuro-borreliosis. A double-blind, randomized controlled clinical trial. In: *European Journal of Neurology*; 2008. p 338-9, Abstract no: P2528.
79. Ljostad U, Mygland A. Remaining complaints 1 year after treatment for acute Lyme neuroborreliosis; frequency, pattern and risk factors. *Eur J Neurol* 2010;17:118-23.
80. Ljostad U, Skogvoll E, Eikeland R, Midgard R, Skarpaas T, Berg A, et al. Oral doxycycline versus intravenous ceftriaxone for European Lyme neuroborreliosis: a multicentre, non-inferiority, double-blind, randomised trial. *Lancet Neurol* 2008;7:690-5.
81. Logigian EL. Peripheral nervous system Lyme borreliosis. *Semin Neurol* 1997;17:25-30.
82. Logigian EL, Kaplan RF, Steere AC. Successful treatment of Lyme encephalopathy with intravenous ceftriaxone. *J Infect Dis* 1999;180:377-83.

83. Luft BJ, Dattwyler RJ, Johnson RC, Luger SW, Bosler EM, Rahn DW, et al. Azithromycin compared with amoxicillin in the treatment of erythema migrans. A double-blind, randomized, controlled trial. *Ann Intern Med* 1996;124:785-91.
84. Luft BJ, Gardner P, Lightfoot RW, Jr. Empiric antibiotic treatment of patients who are seropositive for Lyme disease but lack classic features. *American College of Rheumatology and the Infectious Diseases Society of America. Clin Infect Dis* 1994;18:112.
85. Luft BJ, Halperin JJ, Volkman DJ, Dattwyler RJ. Ceftriaxone--An effective treatment of late Lyme borreliosis. *J Chemother* 1989;1:917-9.
86. Luger SW, Paparone P, Wormser GP, Nadelman RB, Grunwaldt E, Gomez G, et al. Comparison of cefuroxime axetil and doxycycline in treatment of patients with early Lyme disease associated with erythema migrans. *Antimicrob Agents Chemother* 1995;39:661-7.
87. Maraspin V, Cimperman J, Lotric-Furlan S, Ruzic-Sabljić E, Jurca T, Picken RN, et al. Solitary borrelial lymphocytoma in adult patients. *Wien Klin Wochenschr* 2002;114:515-23.
88. Maraspin V, Lotric-Furlan S, Strle F. Development of erythema migrans in spite of treatment with antibiotics after a tick bite. *Wien Klin Wochenschr* 2002;114:616-9.
89. Maraspin V, Ruzic-Sabljić E, Strle F, Cimperman J, Jereb M, Preac-Mursic V. Persistence of *Borrelia burgdorferi* after treatment with antibiotics. *Alpe Adria Microbiology Journal* 1995;4:211-216.
90. Marques A, Shaw P, Schmid CH, Steere A, Kaplan RF, Hassett A, et al. Re: A randomized, placebo-controlled trial of repeated IV antibiotic therapy for Lyme encephalopathy. Prolonged Lyme disease treatment: enough is enough. *Neurology* 2009;72:383-4; author reply 384.
91. Marshall E. Lyme disease. Patients scarce in test of long-term therapy. *Science* 1999;283:1431.
92. Massarotti EM, Luger SW, Rahn DW, Messner RP, Wong JB, Johnson RC, et al. Treatment of early Lyme disease. *Am J Med* 1992;92:396-403.
93. Meier P, Blatz R, Gau M, Spencker FB, Wiedemann P. [Pars plana vitrectomy in *Borrelia burgdorferi* endophthalmitis]. *Klin Monbl Augenheilkd* 1998;213:351-4.
94. Millner MM, Thalhammer GH. Neuroborreliosis in childhood: Treatment with penicillin sodium and ceftriaxone. *Acta Dermatovenerologica Alpina, Panonica et Adriatica* 1996;5:169-172.
95. Mullegger RR, Millner MM, Stanek G, Spork KD. Penicillin G sodium and ceftriaxone in the treatment of neuroborreliosis in children--a prospective study. *Infection* 1991;19:279-83.
96. Nadelman RB, Luger SW, Frank E, Wisniewski M, Collins JJ, Wormser GP. Comparison of cefuroxime axetil and doxycycline in the treatment of early Lyme disease. *Ann Intern Med* 1992;117:273-80.
97. Nadelman RB, Nowakowski J, Forseter G, Bittker S, Cooper D, Goldberg N, et al. Failure to isolate *Borrelia burgdorferi* after antimicrobial therapy in culture-

- documented Lyme borreliosis associated with erythema migrans: report of a prospective study. *Am J Med* 1993;94:583-8.
98. Neumann R, Aberer E, Stanek G. Treatment and course of erythema chronicum migrans. *Zentralbl Bakteriol Mikrobiol Hyg A* 1987;263:372-6.
 99. Nizic T, Velikanje E, Ruzic-Sabljić E, Arnez M. Solitary erythema migrans in children: comparison of treatment with clarithromycin and amoxicillin. *Wien Klin Wochenschr* 2012;124:427-33.
 100. Nowakowski J, McKenna D, Nadelman RB, Cooper D, Bittker S, Holmgren D, et al. Failure of treatment with cephalexin for Lyme disease. *Arch Fam Med* 2000;9:563-7.
 101. Nowakowski J, Nadelman RB, Sell R, McKenna D, Cavaliere LF, Holmgren D, et al. Long-term follow-up of patients with culture-confirmed Lyme disease. *Am J Med* 2003;115:91-6.
 102. Ogrinc K, Logar M, Lotric-Furlan S, Cerar D, Ruzic-Sabljić E, Strle F. Doxycycline versus ceftriaxone for the treatment of patients with chronic Lyme borreliosis. *Wien Klin Wochenschr* 2006;118:696-701.
 103. Oksi J, Nikoskelainen J, Viljanen MK. Comparison of oral cefixime and intravenous ceftriaxone followed by oral amoxicillin in disseminated Lyme borreliosis. *Eur J Clin Microbiol Infect Dis* 1998;17:715-9.
 104. Oksi J, Marjamaki M, Nikoskelainen J, Viljanen MK. *Borrelia burgdorferi* detected by culture and PCR in clinical relapse of disseminated Lyme borreliosis. *Ann Med* 1999;31:225-32.
 105. Pena CA, Mathews AA, Siddiqi NH, Strickland GT. Antibiotic therapy for Lyme disease in a population-based cohort. *Clin Infect Dis* 1999;29:694-5.
 106. Pfister HW, Preac-Mursic V, Wilske B, Einhaupl KM. Cefotaxime vs penicillin G for acute neurologic manifestations in Lyme borreliosis. A prospective randomized study. *Arch Neurol* 1989;46:1190-4.
 107. Pfister HW, Preac-Mursic V, Wilske B, Schielke E, Sorgel F, Einhaupl KM. Randomized comparison of ceftriaxone and cefotaxime in Lyme neuroborreliosis. *J Infect Dis* 1991;163:311-8.
 108. Picha D, Moravcova L, Lasikova S, Patakiova E, Rohacova H, Maresova V. A contribution to the current in post-borrelia syndrome ORIGINAL (NON-ENGLISH) TITLE Prispěvek k problematice postboreliové ho syndromu. *Ceska a Slovenska Neurologie a Neurochirurgie* 2004;67:450-455.
 109. Plorer A, Sepp N, Schmutzhard E, Krabichler S, Trobos S, Schauer G, et al. Effects of adequate versus inadequate treatment of cutaneous manifestations of Lyme borreliosis on the incidence of late complications and late serologic status. *J Invest Dermatol* 1993;100:103-9.
 110. Plotkin SA, Peter G. Treatment of Lyme borreliosis. *Pediatrics* 1991;88:176-179.
 111. Reid MC, Schoen RT, Evans J, Rosenberg JC, Horwitz RI. The consequences of overdiagnosis and overtreatment of Lyme disease: an observational study. *Ann Intern Med* 1998;128:354-62.

112. Renaud I, Cachin C, Gerster JC. Good outcomes of Lyme arthritis in 24 patients in an endemic area of Switzerland. *Joint Bone Spine* 2004;71:39-43.
113. Rohacova H, Hancil J, Hulinska D, Mailer H, Havlik J. Ceftriaxone in the treatment of Lyme neuroborreliosis. *Infection* 1996;24:88-90.
114. Rose CD, Fawcett PT, Eppes SC, Klein JD, Gibney K, Doughty RA. Pediatric Lyme arthritis: clinical spectrum and outcome. *J Pediatr Orthop* 1994;14:238-41.
115. Salazar JC, Gerber MA, Goff CW. Long-term outcome of Lyme disease in children given early treatment. *J Pediatr* 1993;122:591-3.
116. Schardt FW. Clinical effects of fluconazole in patients with neuroborreliosis. *Eur J Med Res* 2004;9:334-6.
117. Schoen RT. Treatment of Lyme disease. *Conn Med* 1988;52:641-3.
118. Selby G, Bridges SJ, Hanington L. Should Lyme disease affecting the nervous system be treated with oral or intravenous antibiotics? *Arch Dis Child Educ Pract Ed* 2008;93:132-4.
119. Seltzer EG, Gerber MA, Cartter ML, Freudigman K, Shapiro ED. Long-term outcomes of persons with Lyme disease. *J Am Med Assoc* 2000;283:609-616.
120. Shadick NA, Phillips CB, Logigian EL, Steere AC, Kaplan RF, Berardi VP, et al. The long-term clinical outcomes of Lyme disease. A population-based retrospective cohort study. *Ann Intern Med* 1994;121:560-7.
121. Sieper J. [Antibiotics in the treatment of arthritis]. *Orthopade* 1998;27:651-3.
122. Sjowall J, Ledel A, Ernerudh J, Ekerfelt C, Forsberg P. Doxycycline-mediated effects on persistent symptoms and systemic cytokine responses post-neuroborreliosis: a randomized, prospective, cross-over study. *BMC Infect Dis* 2012;12.
123. Skogman BH, Croner S, Nordwall M, Eknefelt M, Ernerudh J, Forsberg P. Lyme neuroborreliosis in children: a prospective study of clinical features, prognosis, and outcome. *Pediatr Infect Dis J* 2008;27:1089-94.
124. Skoldenberg B, Stiernstedt G, Karlsson M, Wretling B, Svenungsson B. Treatment of Lyme borreliosis with emphasis on neurological disease. *Ann N Y Acad Sci* 1988;539:317-23.
125. Smith RP, Schoen RT, Rahn DW, Sikand VK, Nowakowski J, Parenti DL, et al. Clinical characteristics and treatment outcome of early Lyme disease in patients with microbiologically confirmed erythema migrans. *Ann Intern Med* 2002;136:421-8.
126. Spathling S, J dK, P H. Therapy of Lyme arthritis with Ceftriaxon - histological proof of Spirochetes in the synovialis after ineffective therapy. In: *Z Rheumatol*; 1992. p 40-1.
127. Spirin NN, Fadeeva OA, Baranova NS, Shipova EG, Stepanov IO. Antibiotic therapy in patients with the combination of definite multiple sclerosis and chronic Lyme disease. *European Journal of Neurology* 2012;19 SUPPL.1:718.
128. Steere AC. Pathogenesis, diagnosis, and treatment of Lyme arthritis. *Ann Rheum Dis* 1993;52:391-393.
129. Steere AC, Green J, Hutchinson GJ. Treatment of Lyme disease. *Zentralblatt fur Bakteriologie Mikrobiologie und Hygiene - Abt. 1 Orig. A* 1987;263:352-356.

130. Steere AC, Green J, Hutchinson GJ, Rahn DW, Pachner AR, Schoen RT, et al. Treatment of Lyme disease. *Zentralbl Bakteriol Mikrobiol Hyg A* 1987;263:352-6.
131. Steere AC, Green J, Schoen RT, Taylor E, Hutchinson GJ, Rahn DW, et al. Successful parenteral penicillin therapy of established Lyme arthritis. *N Engl J Med* 1985;312:869-74.
132. Steere AC, Levin RE, Molloy PJ, Kalish RA, Abraham JH, 3rd, Liu NY, et al. Treatment of Lyme arthritis. *Arthritis Rheum* 1994;37:878-88.
133. Steere AC, Malawista SE, Newman JH, Spieler PN, Bartenhagen NH. Antibiotic therapy in Lyme disease. *Ann Intern Med* 1980;93:1-8.
134. Steere AC, Malawista SE, Hardin JA, Ruddy S, Askenase W, Andiman WA. Erythema chronicum migrans and Lyme arthritis. The enlarging clinical spectrum. *Ann Intern Med* 1977;86:685-98.
135. Stiernstedt G, Granstrom M. [Penicillin treatment is of value in Borrelia-associated arthritis]. *Lakartidningen* 1985;82:2688.
136. Stiernstedt G, Granstrom M, Garde A, Hederstedt B, Jorbeck H, Kolmodin G, et al. [Early penicillin treatment can prevent CNS symptoms in tick-transmitted Borrelia meningitis]. *Lakartidningen* 1985;82:2685-7.
137. Stiernstedt G, Skoldenberg B, Garde A, Kolmodin G, Jorbeck H, Svenungsson B, et al. Clinical manifestations of Borrelia infections of the nervous system. *Zentralbl Bakteriol Mikrobiol Hyg A* 1987;263:289-96.
138. Stricker RB, DeLong AK, Green CL, Savely VR, Chamallas SN, Johnson L. Benefit of intravenous antibiotic therapy in patients referred for treatment of neurologic Lyme disease. *Int J Gen Med* 2011;4:639-46.
139. Stricker RB, Savely VR, Motanya NC, Giclas PC. Complement split products c3a and c4a in chronic lyme disease. *Scand J Immunol* 2009;69:64-9.
140. Strickland GT, Caisley I, Woubeshet M, Israel E. Antibiotic therapy for Lyme disease in Maryland. *Public Health Rep* 1994;109:745-9.
141. Strle F, Preac-Mursic V, Cimperman J, Ruzic E, Maraspin V, Jereb M. Azithromycin versus doxycycline for treatment of erythema migrans: clinical and microbiological findings. *Infection* 1993;21:83-8.
142. Strle F, Ruzic E, Cimperman J. Erythema migrans: comparison of treatment with azithromycin, doxycycline and phenoxymethylpenicillin. *J Antimicrob Chemother* 1992;30:543-50.
143. Stupica D, Lusa L, Cerar T, Ruzic-Sabljić E, Strle F. Comparison of post-Lyme Borreliosis symptoms in erythema migrans patients with positive and negative Borrelia burgdorferi sensu lato skin culture. *Vector Borne Zoonotic Dis* 2011;11:883-9.
144. Suttorp-Schulten MS, Kuiper H, Kijlstra A, van Dam AP, Rothova A. Long-term effects of ceftriaxone treatment on intraocular Lyme borreliosis. *Am J Ophthalmol* 1993;116:571-5.
145. Szantyr BM. Re: A randomized, placebo-controlled trial of repeated IV antibiotic therapy for Lyme encephalopathy. Prolonged Lyme disease treatment: enough is enough. *Neurology* 2009;72:385-6; discussion 386.

146. Szechinski J, Kowalski M, Sobieszczanska B. Our experience in treatment of Lyme arthritis with claforan (cefotaxime) ORIGINAL (NON-ENGLISH) TITLE LECZENIE ZAPALENIA STAWOW TYPU I LYME LEKIEM CLAFORAN - DOSWIADCZENIA WLASNE. *Reumatologia* 1996;34:446-451.
147. Tea N, Eva V, Eva RS, Maja A. Solitary erythema migrans in children: Comparison of treatment with clarithromycin and amoxicillin. *Wien Klin Wochenschr* 2012;124:427-433.
148. Thorstrand C, Belfrage E, Bennet R, Malmborg P, Eriksson M. Successful treatment of neuroborreliosis with ten day regimens. *Pediatr Infect Dis J* 2002;21:1142-5.
149. Tory HO, Zurakowski D, Sundel RP. Outcomes of children treated for Lyme arthritis: results of a large pediatric cohort. *J Rheumatol* 2010;37:1049-55.
150. Wahlberg P, Granlund H, Nyman D, Panelius J, Seppala I. Treatment of late Lyme borreliosis. *J Infect* 1994;29:255-61.
151. Valesova H, Mailer J, Havlik J, Hulinska D, Hercogova J. Long-term results in patients with Lyme arthritis following treatment with ceftriaxone. *Infection* 1996;24:98-102.
152. Van Haaren CPLC, Wijnhuizen TJ, Van Den Broek PJ, Vermeij P. Home intravenous treatment of Lyme disease ORIGINAL (NON-ENGLISH) TITLE INTRAVENEUZE THUISBEHANDELING VAN DE ZIEKTE VAN LYME. *Pharmaceutisch Weekblad* 1994;129:680-683.
153. Vazquez M, Sparrow SS, Shapiro ED. Long-term neuropsychologic and health outcomes of children with facial nerve palsy attributable to Lyme disease. *Pediatrics* 2003;112:e93-7.
154. Weber K, Neubert U, Thurmayer R. Antibiotic therapy in early erythema migrans disease and related disorders. *Zentralbl Bakteriol Mikrobiol Hyg A* 1987;263:377-88.
155. Weber K, Preac-Mursic V, Neubert U, Thurmayer R, Herzer P, Wilske B, et al. Antibiotic therapy of early European Lyme borreliosis and acrodermatitis chronica atrophicans. *Ann N Y Acad Sci* 1988;539:324-45.
156. Weber K, Preac-Mursic V, Wilske B, Thurmayer R, Neubert U, Scherwitz C. A randomized trial of ceftriaxone versus oral penicillin for the treatment of early European Lyme borreliosis. *Infection* 1990;18:91-6.
157. Weber K, Wilske B, Preac-Mursic V, Thurmayer R. Azithromycin versus penicillin V for the treatment of early Lyme borreliosis. *Infection* 1993;21:367-72.
158. White B, Seaton RA, Evans TJ. Management of suspected Lyme borreliosis: experience from an outpatient parenteral antibiotic therapy service. *QJM* 2012.
159. Wormser GP. Treatment of *Borrelia burgdorferi* infection. *Laboratory Medicine* 1990;21:316-321.
160. Wormser GP, Nowakowski J, Nadelman RB. Duration of treatment for Lyme borreliosis: time for a critical reappraisal. *Wien Klin Wochenschr* 2002;114:613-5.

161. Worth WD. Therapy of erythema migrans (Lyme disease) ORIGINAL (NON-ENGLISH) TITLE THERAPIE DER ERYTHEMA-MIGRANS-KRANKHEIT (LYME KRANKHEIT). Deutsche Medizinische Wochenschrift 1985;110:1379-1380.
162. Vrethem M, Hellblom L, Widlund M, Ahl M, Danielsson O, Ernerudh J, et al. Chronic symptoms are common in patients with neuroborreliosis - A questionnaire follow-up study. Acta Neurol Scand 2002;106:205-208.
163. Zochling N, Mullegger RR, Schluepen EM, Soyer HP, Hodl S, Wienecke R, et al. Minocycline in early Lyme Borreliosis. Acta Dermatovenerologica Alpina, Panonica et Adriatica 1996;5:163-168.