**Lyme Disease**

**GOALS:**

1. Understand the etiology and pathophysiology of Lyme disease.
2. Become familiar with the disease presentation in children in the outpatient setting.
3. Be able to recognize diagnosis and treatment options in the outpatient setting.
4. Have a greater appreciation of long-term prognosis for Lyme disease.

**OBJECTIVES:**

1. Identify the etiology and describe the pathogenesis of Lyme disease.
2. List risk factors for acquiring the disease.
3. Name the stages of Lyme disease.
4. Describe clinical manifestations, especially of the skin, heart, eyes, musculoskeletal system, and central nervous system.
5. Elaborate on the differential diagnoses of the musculoskeletal, CNS, and dermatologic manifestations, and methods to identify Lyme disease over other illnesses.
6. Provide examples of current diagnostic testing.
7. Explain the treatment options for Lyme disease in the outpatient setting.
8. Describe long-term prognosis in children with Lyme disease.

**INSTRUCTIONAL STRATEGY:**

1. Lecture
2. Case presentation

**RESOURCES:**

1. <http://www.niaid.nih.gov/topics/lymedisease/Pages/lymeDisease.aspx>
2. <http://www.lymediseaseassociation.org/index.php?option=com_content&view=article&id=552&Itemid=27>

**EVALUATION STRATEGY:**

1. Post-test
2. Case management discussions

**REFERENCES:**

1. Shapiro ED. Lyme Disease. *Pediatrics in Review* 1998; 19; 147-154.
2. Esposito S, Bosis S, Sabatini C, Tagliaferri L, Principi N. Borrelia burgdorferi infection and Lyme disease in children. *Int J Infect Dis.* 2013 Mar; 17(3): e153-8.
3. Huppertz HI, Bartmann P, Heininger U, Fingerle V, Kinet M, Klein R, Korenke GC, Nentwich HJ; Committee for Infectious Diseases and Vaccinations of the German Academy for Pediatrics and Adolescent Health. Rational diagnostic strategies for Lyme borreliosis in children and adolescents: recommendations by the Committee for Infectious Diseases and Vaccinations of the German Academy for Pediatrics and Adolescent Health. *Eur J Pediatr.* 2012 Nov; 171(11): 1619-24.
4. Bremell D, Hagberg L. Clinical characteristics and cerebrospinal fluid parameters in patients with peripheral facial palsy caused by Lyme neuroborreliosis compared with facial palsy of unknown origin (Bell's palsy). *BMC Infect Dis.*2011 Aug 10; 11: 215.
5. Cohn KA, Thompson AD, Shah SS, Hines EM, Lyons TW, Welsh EJ, Nigrovic LE. Validation of a Clinical Prediction Rule to Distinguish Lyme Meningitis From Aseptic Meningitis. *Pediatrics* 2012; 129(1): e46-e53.
6. Deanehan JK, Kimia AA, Tan Tanny SP, Milewski MD, Talusan PG, Smith BG, Nigrovic LE. Distinguishing Lyme from septic knee monoarthritis in Lyme disease-endemic areas. *Pediatrics.* 2013 Mar; 131(3): e695-701.
7. Tory HO, Zurakowski D, Sundel RP. Outcomes of children treated for Lyme arthritis: results of a large pediatric cohort. *J Rheumatol.* 2010 May; 37(5): 1049-55.
8. Skogman BH, Glimåker K, Nordwal Ml, Vrethem M, Ödkvist L, Forsberg P. Long-term Clinical Outcome After Lyme Neuroborreliosis in Childhood. *Pediatrics* 2012; 130 (2): 262-269.