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**Articles**

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# Lyme borreliosis in the Netherlands: strong increase in GP consultations and hospital admissions in past 10 years

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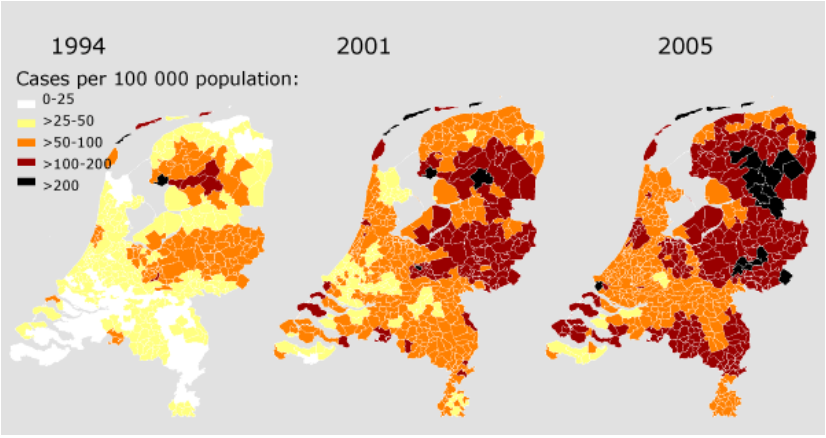
Lyme borreliosis (Lyme disease) is not notifiable in the Netherlands, and so retrospective studies to determine the national occurrence of tick bites, erythema migrans and Lyme borreliosis have been carried out. In 1995, 2002 and 2006, all general practitioners in the country (approximately 8000 GPs with population coverage of 88%, 68% and 71%, respectively) were asked to complete a postal questionnaire on tick bites and erythema migrans case-patients seen in the previous year. Annual counts of hospital admissions for Lyme borreliosis were obtained from a database of the Dutch National Medical Register, which covers nearly all hospitals in the Netherlands, using version 9 of the International Classification of Diseases (ICD-9) code 104.8. This code represents 'other spirochetal infections', and includes Lyme borreliosis, leptospirosis, intestinal spirochetosis, non-syphilis treponemas and Plaut-Vincent angina. A majority of 'code 104.8' infections are Lyme borreliosis, because most of the other infections have their own codes.

Based on the survey responses, the incidence of erythema migrans consultations was estimated at 39 per 100 000 population in 1994, which doubled to 74 per 100 000 in 2001, and tripled to 103 per 100 000 in 2005. The incidence of tick bite consultations increased from 191/100 000 people in 1994 to 372/100 000 in 2001, and continued to increase to 446/100 000 in 2005.

The greatest increase in tick bites and erythema migrans was seen in the south and northeast of the country, and several locations along the coast in the west (Figure). Hospital admissions coincided geographically with locations where physicians were consulted for tick bites and erythema migrans. The estimated annual number of hospital admissions for Lyme borreliosis increased from 170 patients in 1994 to 229 in 2001, 228 in 2002, 331 in 2003, 411 in 2004, and 435 patients in 2005, with the greatest increase occurring between 2002 and 2004.

**Figure.** The geographical distribution of erythema migrans cases per 100 000 inhabitants of the Netherlands in 1994, 2001, 2005. Source: GP survey




It is not certain that the increase of hospital admissions in recent years represents a true doubling in the occurrence of Lyme borreliosis, as a new guideline concerning diagnosis and treatment of Lyme disease was published in mid-2003. This guideline encouraged treatment of severe Lyme borreliosis with intravenous antibiotics, which are usually administered in hospital. Analyses of the role of and changes in ecological risk factors and outdoor recreation, between regions and years, are forthcoming.

Lyme borreliosis appears to be an increasingly important healthcare problem in the

Netherlands. Another study, carried out in the Netherlands between 2000 and 2004, demonstrated that between 0.8% and 11% of the collected ticks were contaminated with *Borrelia burgdorferi* sensu lato, varying between years and types of vegetation. Contamination of ticks with other pathogens like *Anaplasma / Ehrlichia* (1%-15%), *Rickettsia* (5%–60%*), and *Babesia* (0%-1%) was also found [1]. A prospective study in sentinel general practices to determine the regional differences in the level of infection of ticks removed from patients for different tick-borne pathogens is planned for 2007. Serological tests will also be performed for erythema migrans cases seen at these general practices and their clinical outcome will be observed.

To increase awareness about the severity, diagnosis and treatment of Lyme disease, the results of the GP surveys in 1994, 2001 and 2005 were communicated to all general practitioners in the Netherlands. This information was also sent to municipal health centres, with extra information about the availability of our new brochure about ticks and Lyme disease. In 2002 and 2006, the RIVM issued a press release to alert the public about the increase in erythema migrans case-patients, which received much media attention [2]. Both press releases referred to the fact sheets and questions and answers on the RIVM website.

***Correction.** This was corrected from '45%-60%' to '5%-60%' on 26 June 2006*
*Eurosurveillance editorial office, 26 June 2006.*

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