

Increase in the incidence and burden of Lyme borreliosis in the Netherlands between 2014 and 2017

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Introduction

After a threefold increase in general practitioner (GP) consultations for tick bites and erythema migrans (EM) from 1994 to 2009 in the Netherlands, a first sign of stabilization in EM diagnoses was observed in 2014. To assess whether this stabilization continued after 2014, we repeated the GP survey in 2017, with identical methods as the earlier surveys.

Methods

To all GPs in the Netherlands, a postal questionnaire was sent inquiring about the number of consultations for tick bites and erythema migrans (EM) diagnoses in 2017 and the size of their practice population. The EM incidence estimate for 2017 was extrapolated towards the incidence and disease burden of all Lyme borreliosis diagnoses in 2017 based on earlier studies. In these earlier studies we assessed the incidence of EM in proportion to the incidence of disseminated Lyme borreliosis and Lyme-related persisting symptoms and the corresponding disease burden of Lyme borreliosis manifestations in 2010 (2-3).

Results

The 2017 survey revealed an increase to 531 tick bite consultations (95%CI: 515-548) and 149 EM diagnoses (95%CI: 144-154) per 100,000 inhabitants, compared to 488 tick bite consultations (95%CI: 473-503) and 140 EM diagnoses (95%CI: 135-144) per 100,000 inhabitants in 2014 (Table 1, Figure 1 and 2).

Based on earlier studies, this can be extrapolated to a total of 157 per 100,000 acute cases of Lyme borreliosis, i.e. 149 diagnoses of EM and 8.6 diagnoses of disseminated Lyme borreliosis, and 6.2 cases of Lyme-related persisting symptoms per 100,000. Nationwide the incidence rates of 2017 equaled about 91,000 tick bite consultations, 27,000 diagnoses of acute Lyme borreliosis (i.e. 25,500 erythema migrans and 1,500 disseminated Lyme borreliosis diagnoses) and 1050 cases of Lyme-related persisting

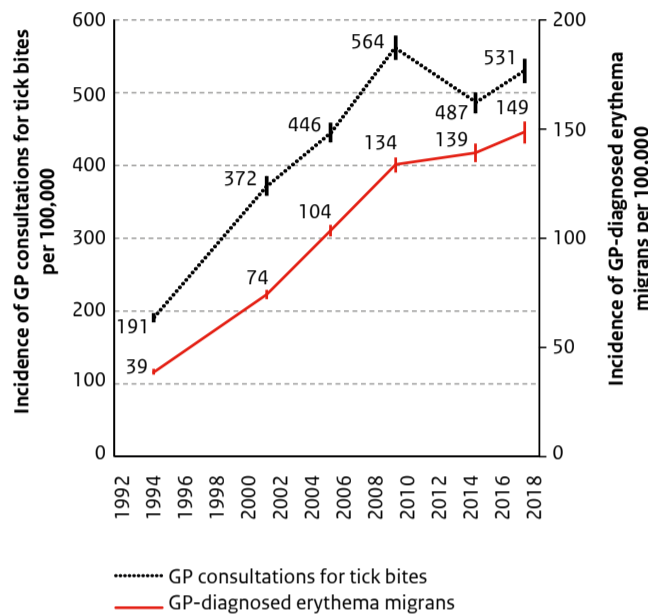


Figure 1. The incidence of tick bite consultations and erythema migrans diagnoses in GP practice between 1994 and 2017 in the Netherlands (17.1 million pop. in 2017).

Table 1. The incidence of tick bite consultations and manifestations of Lyme borreliosis in 2014 and 2017 in the Netherlands (17.1 million pop. in 2017, pop. coverage of the GP survey 62% in 2014 and 51% in 2017).

	Incidence per 100,000 (95% CI)	
	2014	2017
Tick bite consultations	488 (473-503)	531 (515-548)
Erythema migrans	140 (135-144)	149 (144-154)
Disseminated Lyme borreliosis*	8.1	8.6
Lyme-related persisting symptoms*	5.8	6.2

* As derived using earlier assessed multiplication factors between erythema migrans and the other Lyme manifestations (2).

References

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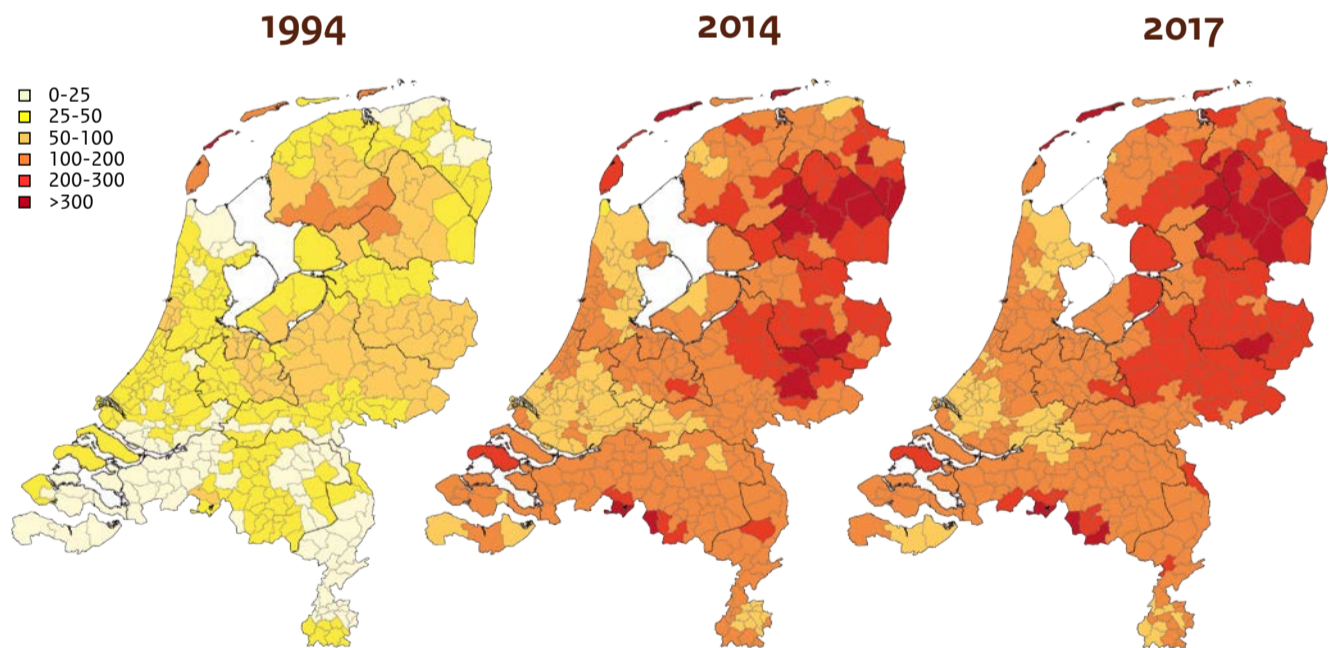


Figure 2. Geographical distribution of GP-diagnoses of erythema migrans per 100,000 population in the Netherlands in 1994, 2014 and 2017.

Conclusions

- In 2017 the incidence of erythema migrans and thus Lyme borreliosis in the Netherlands showed an increase compared to 2014, whereas a stabilization of the incidence was observed earlier between 2009 and 2014.
- Between 1994 and 2017 the incidence of Lyme borreliosis diagnoses increased almost fourfold.
- The drop in tick bite consultations between 2009 and 2014 may be due to additional public health campaigns increasing the skills of the public to remove ticks from their skin themselves.
- Lyme borreliosis continues to have substantial impact on public health, which calls for additional prevention, diagnostic and treatment strategies to limit its disease burden.
- It remains debated to what extent Lyme-related persisting symptoms – i.e. persisting symptoms attributed to Lyme borreliosis – are actually due to a current or preceding infection. Not all disease burden due to Lyme-related persisting symptoms may be mitigated through prevention and control of acute LB.

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