

# THE 'TICK'-ING TIME BOMB

The incidence of Lyme disease in the Outer Hebrides (2010-2017)



## Background

Concerns were raised to the Director of Public Health, NHS Western Isles, of a perceived increase in the incidence of Lyme disease and erythema migrans; this was being associated by the public with an increase in the deer population in the Uists.

Lyme disease is caused by infection with *Borrelia* species (classically *Borrelia burgdorferi*) and is transmitted to humans through the bite of an infected tick; infection is acquired by immature ticks from infected small wild mammals, which act as a reservoir of the organism (Health Protection Scotland 2017).

Erythema migrans is defined as a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks following a *Borrelia*-infected tick bite to form a large round lesion, often with partial central clearing (CDC 2017).

Deer do not transmit *Borrelia* but are often the most important host for ticks (Gilbert et al 2012). Studies have identified that where there is an increase in deer densities there can be an increase in tick density.



## Methodology

To establish an accurate incidence of Lyme disease in the Outer Hebrides the study explored two diagnostic criteria:

- Laboratory diagnosis - Incidence of positive serology
- Clinical diagnosis - Presentation with erythema migrans in primary care

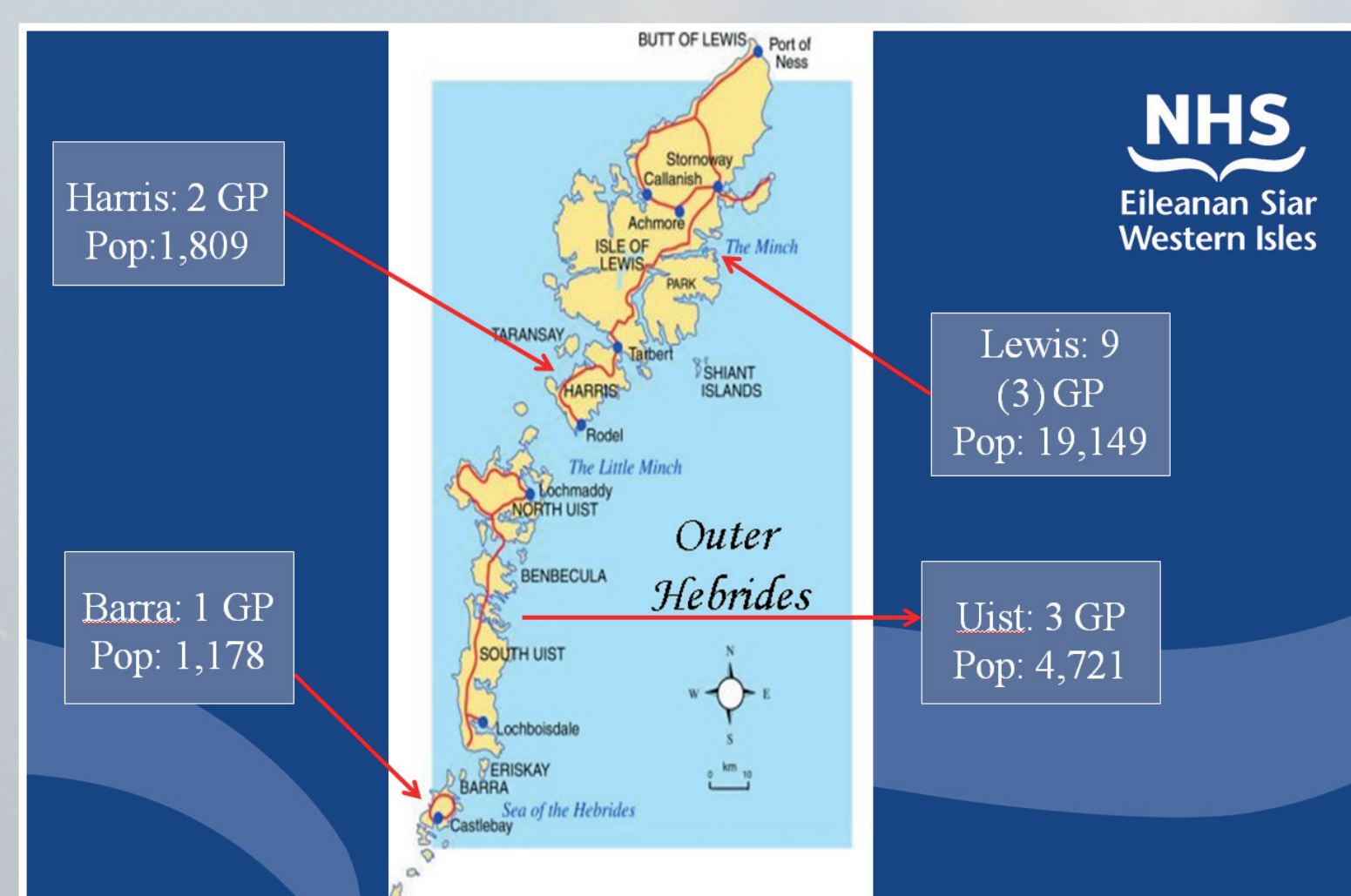
The data were collected from:

- Electronic Communication of Surveillance in Scotland (ECOSS) from 2010 for patients with positive *Borrelia* serology. The data were cleaned to identify only the first episode for Western Isles residents matched against an electronic search of GP systems
- GP practice staff who reviewed all cases that appeared with any type of Lyme-/erythema migrans-related Read codes and counted only first episodes. This search identified the range of codes used

Patients who had attended with erythema migrans and who not had a code entered on the GP system could not be identified.

## Results

The data collected are set out in Tables 1 and 2.



Population sizes for each area are included on the map

**Table 1: Number of people with, and incidence of, positive serology for Lyme disease in the Outer Hebrides and the Uists subset 2010-2017**

	2010	2011	2012	2013	2014	2015	2016	2017	Mean incidence 2010-2017
Positive serology OH	14	8	4	5	11	7	10	6	30.2/100,000 pop
Positive serology Uists	8	6	2	4	10	7	8	6	119/100,000 pop

Comparative incidence rates include:

- Scotland (2016) - 3.2/100,000
- USA (2015) - 9.5/100,000
- Canada (2015) - 2.6/100,000 (Nova Scotia 26/100,000)
- France (2015) - 51/100,000

**Table 2: Number of people presenting with erythema migrans in primary care by island, 2010-2017**

	2010	2011	2012	2013	2014	2015	2016	2017	Mean incidence 2010-2017
Lewis	9	12	12	12	12	14	12	1	68.5/100,000
Harris	0	0	0	0	0	0	0	0	0
Uists	24	20	27	20	32	29	20	45	574/100,000
Barra	1	1	0	0	1	1	1	0	53/100,000
Outer Hebrides	34	33	39	32	45	44	33	46	142/100,000

## Conclusions

The data presented indicates that the Outer Hebrides (particularly Uist) has a higher recorded incidence of Lyme disease in its population than elsewhere in Scotland.

National surveillance data could be under-reporting the true incidence of Lyme disease.

There is a lack of accurate data on non-laboratory confirmed cases. Through close working with primary care colleagues a template has been developed to standardise the use of Read codes within GP practices.

Action is required to reduce the incidence of Lyme disease in the Outer Hebrides and an awareness raising campaign has been planned and implemented.

Research into the causes of such high incidence of Lyme disease within the Outer Hebrides has begun.

Multiagency responses are necessary to support the control of ticks, reduce the frequency of tick bites and ensure early recognition of symptoms to reduce morbidity.

## References

- Centers for Disease Control and Prevention (2017) [online] Available from: [www.cdc.gov/lyme/signs\\_symptoms/rashes.html](http://www.cdc.gov/lyme/signs_symptoms/rashes.html) Accessed on 14 February 2018
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- Health Protection Scotland (2017) [online] Available from: [www.hps.scot.nhs.uk/giz/lymedisease.aspx](http://www.hps.scot.nhs.uk/giz/lymedisease.aspx) Accessed on 13 February 2017

## Further information

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