



Public Health
England

Lyme disease conference

Lyme disease in Scotland

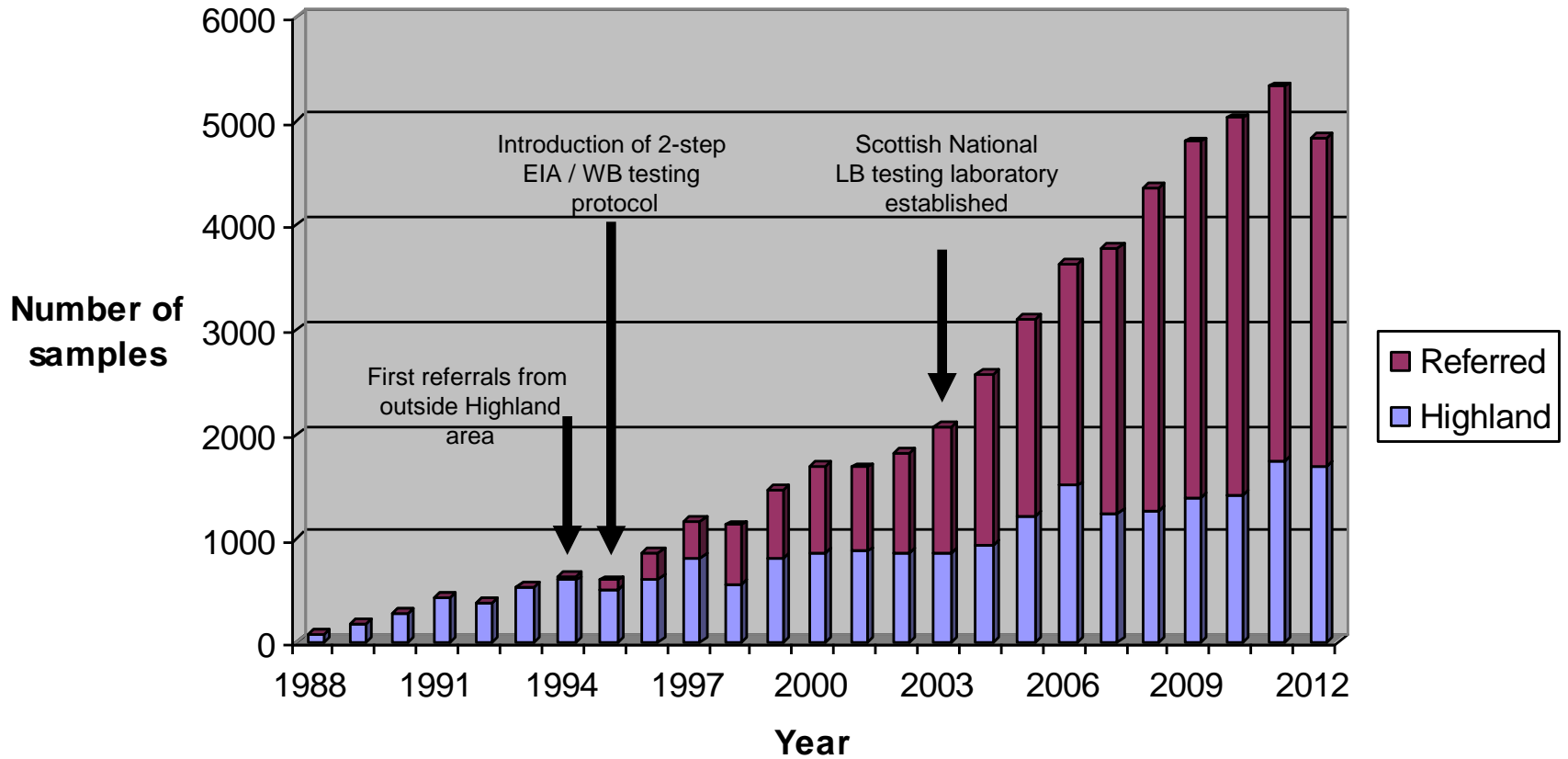
Roger Evans, Raigmore Hospital, NHS Highland

9 October 2013

Small beginnings

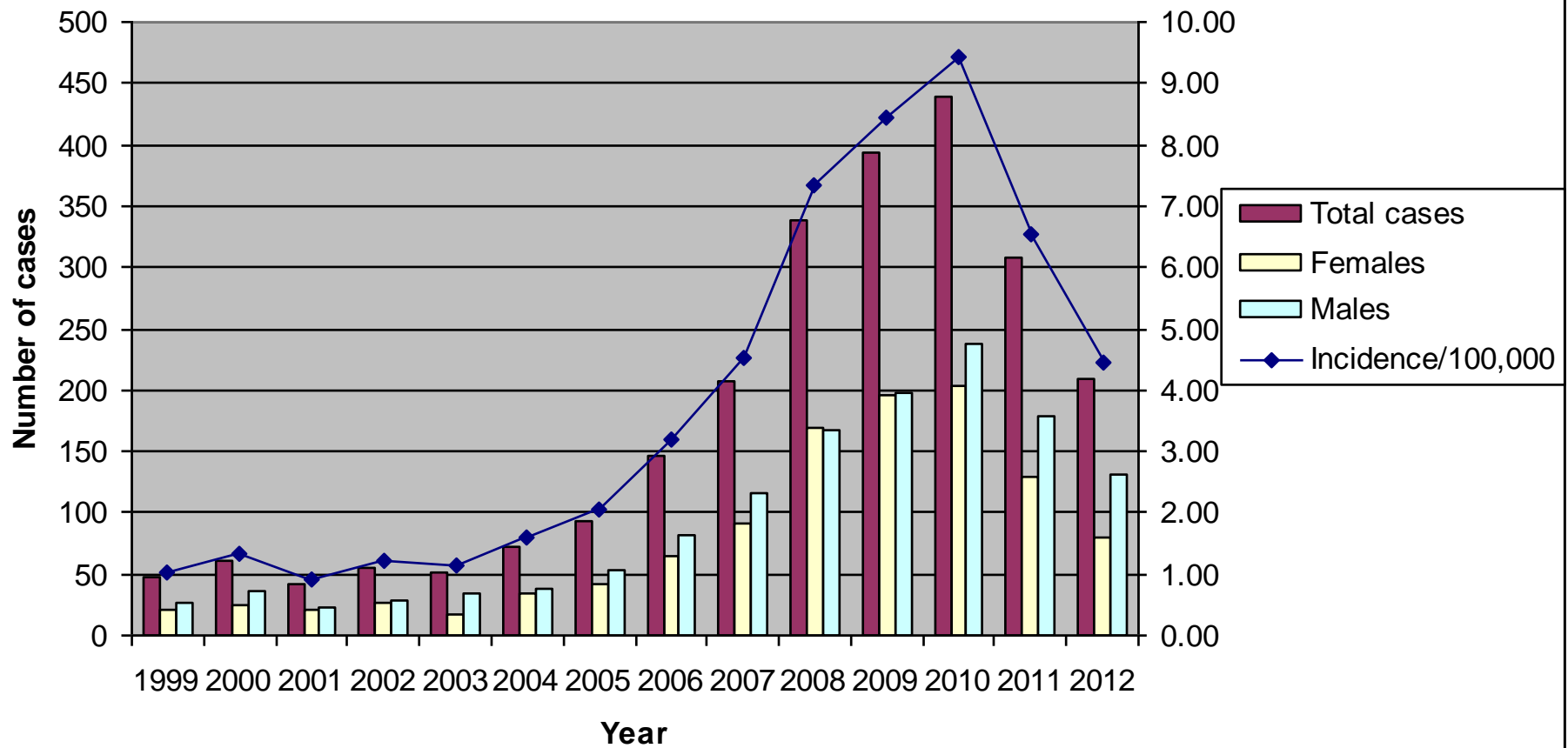
- 1988: cases noted by GPs, Immunofluorescence testing on serum samples
- 1994: first referrals outside of NHS Highland
- 1995: two step testing protocol of EIA and WB.
- 2003: established national Lyme borreliosis testing laboratory (SNLBTL) in Inverness.

Number of Highland and referred serum samples for Lyme borreliosis testing from 1988-2012



LB epidemiology

Number of seropositive LB cases diagnosed by SNBTL from 1999-2012



Reporting new cases

- In Scotland, Lyme borreliosis is not a notifiable disease but *Borrelia burgdorferi* is a notifiable organism (Public Health Act 2006)
- Current data: all first time Western blot positive cases reported
- Current practice to send a questionnaire from these patients to all clinicians

Are the data correct?

- LB is a clinical diagnosis supported by laboratory results
 - Does WB positive = active LB?
- Encouraging clinicians not to test for LB if they present with erythema migrans (EM)
 - Figures need revising: likely to be higher
- GPs do not refer all LB patients for testing
 - Figures need revising: likely to higher (5-10x)

Current challenges

- Investigating avidity WB to identify markers of active / early / past infection
 - Encouraging results so far
- Revising reporting of LB cases to Health Protection Scotland (HPS) to include those patients with EM (not tested)
- GP R&D project: investigate the number of cases not being referred by GPs

Tick collections



Results

- 159 ticks collected
- 25 isolates
- 7 identified so far
 - *B. burgdorferi* sensu stricto, *B. garinii*, *B. afzelii*
- 7 culture +, PCR -
- 18 isolates for whole genome sequencing to be performed

Site	No. of ticks	Culture positive	% prevalence
Urchany	115	22	19.1
Culloden	37	2	5.4
Inverness	6	1	16.7

		Culture	
		Positive	Negative
PCR	Positive	18	3
	Negative	7	26

Tick comments

- Culture positive, PCR negative
 - Spatial sampling / low numbers (culture became positive within 3-4 days)
 - Other *Borrelia* sp.? Not *B. miyamotoi* as PCR based on flagellin gene which can detect this species
- Ecology value – is the *Borrelia* genome changing over time?

Conclusions

- From small beginnings a competent, LB diagnostic laboratory has been established in Scotland
- Addressing the need for active *Borrelia* infection marker
- Revising epidemiology data to give more accurate picture of LB in Scotland
- Exploring whether other tick-borne infections are present in Scotland





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