



Public Health  
England

# Lyme disease conference

## Research plans and applications

*Tim Brooks, Amanda Semper, Jackie Duggan*

9 October 2013



Public Health  
England

# Producing new UK guidelines

Using PHE remit covering all aspects of public health, to produce:

- Guidance tailored to UK conditions
- Covering diagnosis, treatment & investigation of complications and recommended routes to follow
- Covering differential diagnosis and further investigations
- Treatment guidelines for Lyme
  - Acute
  - Late or disseminated disease

Identification of gaps in knowledge; recommendations for future work

Wide team:

GPs, ID physicians, Microbiologists, Neurologists,  
Rheumatologists, Psychologist/psychiatrist,  
paediatricians



Public Health  
England

# Epidemiology studies

Tick sampling & pathogen detection

*Borrelia* spp & other TBD prevalence & distribution in UK

- Pockets of infection

Symptoms association with different TBD

Environmental factors encouraging spread

Outcome:

Better public health information & targeted alerts



# Diagnostics: development & validation

- Plex-ID to identify antigen in early infection (start: Q1 2014)
- Boosted Lyme PCR for low bacterial load (start: Q3 2014)
- Serological arrays to identify Abs against *Borrelia* species, protein variants (start: Q4 2014)
- Investigation of the diagnostic value of tests based on:
  - T cells (start: Q4 2014; with external partners)
  - iNKT cells (start: Q4 2014; with external partners)
  - innate immune cells (potential collaboration with Boulder Diagnostics)

All new tests require extensive validation against well-characterised clinical samples



# The dream clinical study

## ‘The course of *true Lyme*’

- 2 parallel clinical studies:
- Longitudinal: from GP presentation to resolution / persistence of symptoms
- Cross-sectional studies: sampling at different stages of Lyme
  - After tick bite, during EM, flu-like symptoms, early and late neuroborreliosis, ACA, arthritis; normal uninfected donors.
- Recruitment through GPs and primary care centres in Lyme endemic areas
- Blood samples, skin biopsies, CSF etc
- Immune response during course of disease
- Follow patterns e.g. protein bands on line blots
- Outcomes:
  - Predictive patterns
  - New protein targets for blots



# Funding

- Research studies cost money
- RIPL has a small internal budget for assay development
  - Planned Plex-ID studies
  - PCR validation and optimisation
- External funding sources (competitive!)
  - NIHR Advanced Research Programme (the Course of True Lyme)
  - Research councils?
    1. MRC – human LB studies
    2. NERC – Tick studies
  - EU (changed priorities & structure in H2020)
  - US NIH

