Focusing Routine Surveillance Activities for Lyme Disease: Investigation of Exposures in Confirmed Cases of Early Lyme Disease

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Objective

In order to respond to the increase of reports of Lyme Disease (LD) to local health departments and the limited utility of routine LD surveillance, active surveillance activities were focused on collecting exposure data from LD cases with a reasonably narrow date range of exposure.

Background

Over the past seven years, the number of LD cases in Anne Arundel County has more than doubled, from 84 in 2000 to 196 in 2007, which correlates to CDC findings [1,2]. It is endemic in 10 states, including Maryland, and Anne Arundel County has the second highest number of LD cases in the state[1]. Despite the increasing prevalence and growing public concern, there is no definitive evidence regarding efficacy of personal preventive measures and environmental interventions [3,4]. Other county-level studies have investigated risk factors, but none have included the investigation as a part of routine surveillance or narrowed the study population to cases with a known exposure date range [3].

Methods

A questionnaire was administered over the phone to all cases of early LD cases reported to the County. Cases were determined to have early LD only if an erythema migrans (EM) rash >5cm in diameter was present and physician diagnosed. This subset of LD cases was selected since the EM rash occurs within 3-30 days after a bite from an infected tick which allows for a reasonably narrow time period for cases to recall relevant exposures. Cases with positive laboratory results do not have the ability to identify a reasonably narrow date range in which the bite from an infected tick occurred since many report no history of a tick bite or cannot distinguish which tick bite over a long period of time was the source of infection. In 2007 there were 196 confirmed cases of LD in the County, 48 of which had an EM rash. The sample size target was n=50, and by the end of October 2008, n=33 interviews were completed. Data collection will continue through November 2008. The questionnaire was a retrospective crossectional survey with qualitative and quantitative components and is designed to capture specific areas (e.g. specific parks or neighborhoods) in the county where exposure to infected ticks may have occurred and specific activities (e.g. gardening, golfing) during which exposure may have occurred.

Results

Preliminary results include identification of some specific geographic locations where cases were likely exposed such as a number of community beaches with tall grasses located in specific neighborhoods and a golf course. Common activities include golfing, gardening, and outdoor sports played on manicured fields. Other anecdotal evidence included: hunters who reported reluctance to use insect repellants because it may alert animals to human presence and over-diagnosis of EM rash by some physicians. In the latter example, a number of providers reported an EM rash in situations where the rash was only described by the patient and not examined by the provider. In other situations, interviewed patients described rashes that were grossly different from a typical EM rash. A final analysis of these data will be available in November 2008.

Conclusions

While most local health departments in LD endemic areas do not have the resources to investigate every reported case of LD, narrowing investigation efforts to a subset of the total cases (early LD cases) may yield valuable results. This strategy may be particularly useful at the local/county level where specific geographic areas and community groups may be targeted for education and/or environmental interventions. Focused and active LD surveillance may also inform the development of a more rigorous evaluation of exposures and activities.

References

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