LYME AND OTHER TICKBORNE DISEASES PREVENTION STUDIES (LTDPS):
Upper Midwest Tickborne Disease Prevention Survey

Supporting Statement B for a New Generic Information Collection Request

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B. Collections of Information Employing Statistical Methods

The purpose of this survey is to provide direction for future education and promotion of activities that reduce exposure to ticks for the public in the upper Midwest, as well as support efforts to control or prevent the transmission of the pathogens that cause Lyme disease, anaplasmosis, and babesiosis.

Collection of information from this survey is not designed or intended to develop incidence or prevalence estimates. This survey is not intended to yield results that are statistically projectable, nationally representative, or that produce precise estimates of population parameters. Information gathered under this gen-IC will not be used for the purpose of substantially informing influential policy decisions.

1. Respondent Universe and Sampling Methods

Using a cross-sectional design, we will conduct a population-based survey among residents of MI, MN, and WI in the summer of 2019. We will conduct descriptive analyses of survey results and evaluate associations, if any, between states as well as between participant knowledge, attitudes, socioeconomic factors, and disease prevention behaviors.

We will send survey invitations to a random sample of households among "high risk" counties in MI, MN, and WI (Attachment 1). "High risk" counties are defined as counties with a five-year average (2013-2017) Lyme disease incidence ≥ 10 cases per 100,000 persons. One adult from each residence will be selected to respond to the survey based on who in the household had the most recent birthday, which is an established technique to approximate random sampling. Minors will not be eligible to respond to the survey as adults are the key determinants of prevention measures used and/or purchased for a household. While children are also considered a high-risk demographic for tickborne diseases, the final sample is expected to be representative of the adult populations with highest tickborne disease risk within these three states, in the absence of non-response. We aim to recruit at least 1,977 individuals for this study (at least 659 people per state) to collect responses that are representative of the populations of these states.

- Target population: all adult residents of "high risk" counties in MI (n=8), MN (n=49), and WI (n=59)
- Sampling frame: all households with residential addresses listed in the United States Postal Service database in "high risk" counties in MI, MN, and WI
- Sampling unit: households
- Sample selection: random sampling stratified by county and allocated according to county population size
- Sample: 1,977 randomly selected households (659 per state) in MI, MN, and WI
- Observation unit: individual

As noted above, respondents will be selected based on which adult household resident had the most recent birthday. Eligible survey respondents include adults ≥ 18 years of age who speak or understand the English language. Adults who are not able to answer for themselves are not included and no other adult should answer on their behalf.

We will purchase a random sample of addresses from a company called Marketing Systems Group (MSG), since the monthly-updated list of addresses is not directly available from USPS. MSG will randomly select addresses for each "high risk" county in MI, MN, and WI, and the number of addresses

selected per county will be allocated proportional to county population size. With a minimum necessary sample of 659 respondents in each of the three states and an anticipated response rate of 5% (a conservative estimate based on the response rate from a recent TickNET survey), we will identify a random selection of 13,300 addresses in each state (39,900 addresses total) for recruitment.

This study will require a sample size of 659 respondents in each state for a total of 1,977 respondents. Our sample size calculation is based on the following inputs:

- Expected response of 50% of participants likely to respond that they are willing to use any prevention method on a regular basis to prevent tick bites and tickborne diseases
- 99% CI (higher than 95% to account for multiple comparisons of responses among the different states)
- Acceptable error rate of +/- 5%

The survey in REDCap will have a response limit of 1000 completed responses.

2. Procedures for the Collection of Information

Once randomly selected, per above, states will then mail survey invitations in the form of postcards (Attachment 3) to potential participants. This postcard will:

- explain the purpose of the study, scope of participant involvement, and compensation for participants' time
- define eligibility criteria
- give the participant the link to the survey with a unique access code
- tell the participant the survey expiration date (~4-6 weeks from sent date of invitation)
- ask the participant to take the web-based survey or call the state study coordinator if interested in participating
- give study website (Attachment 7) and state contact information in case of questions or in case the participant would like to withdraw from the study subsequent to participation

A similar reminder postcard (Attachment 2) will be mailed to all potential participants two weeks after the initial invitation was mailed. The reminder postcard will explain all of the information as included in the initial invitation but will also let participants know they can disregard the reminder if they have already completed the survey.

In this study, participants will complete one web-based survey (Attachment 4), which may be taken over the phone with a state study coordinator if desired by the participant. The survey is expected to take 10 minutes to complete. The surveys will expire roughly four weeks from the time participants receive the survey invitations. After completion of the survey, participants will be mailed a thank you letter with a $10 gift card or emailed a thank you notice with a $10 e-gift card (Attachment 5).

Participants may voluntarily withdraw from this study for any reason at any time. If participants wish to withdraw after taking the survey, they can contact their state study coordinator using the information provided on their survey invitation. The state study coordinator will then mail these participants a withdrawal letter (Attachment 6) stating that their survey responses will not be used for any purpose and will be destroyed.

The survey (Attachment 4) will be developed and administered using the Research Electronic Data Capture software (REDCap). Each randomly selected address from MSG will be assigned an anonymous recruitment ID generated by each study site. The recruitment IDs will be loaded into REDCap and assigned unique access codes generated by REDCap. These addresses, recruitment IDs, and access codes will be linked and stored in a separate spreadsheet, outside of the REDCap database. Each access code will be included in the survey invitation postcard and will be required to access the survey, whether taken by the participant online or over the phone with a study coordinator. The beginning of the survey will request information to attempt to confirm that the respondent is eligible to take the survey (i.e., if the respondent is at least 18 years of age or older and understands English). If the respondent is found to be ineligible, the survey will be terminated and the respondent will not receive a gift card.

The following variables will be collected from survey responses:

- Age of the adult in the household answering the survey (i.e., the person about whom information will be collected)
- Knowledge and attitudes related to ticks and tickborne diseases (e.g., concern about getting a tickborne disease, tick exposure activity)
- Behaviors that are currently done to prevent tick bites and tickborne diseases, including any barriers to prevention methods that are not performed
- Behaviors that the respondent might be willing to do to prevent tick bites and tickborne diseases, including personal, household, and community-based prevention methods
- Whether the respondent would be willing to pay for tick control prevention measures, both household and community-based methods
- Reasons why the respondent would not be willing to practice or pay for tick control prevention measures (e.g. safety, cost, efficacy)
- Additional demographics (gender, race, ethnicity, education, income)

List of study materials (attachments):

1. Recruitment areas (high-risk counties in MN, WI, and MI)
2. Reminder postcard
3. Invitation postcard
4. Survey
5. Thank you letter
6. Withdrawal letter
7. CDC study website
8. Human subjects determination

3. Methods to Maximize Response Rates and Deal with Nonresponse

We will attempt to mitigate non-response by sending a reminder to take the survey two weeks after the initial survey invitation. We will not be able to assess tickborne disease risk perception for non-responders, but we will be able to understand some aspects of their actual risk based on their address and corresponding disease incidence in their county.

4. Tests of Procedures or Methods to be Under-taken

CDC will pilot the survey with nine non-federal employees to obtain feedback about readability, clarity of information, and any other concerns.

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

All persons listed below may be involved in design, collection and analysis of proposed data:

CDC investigators

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