

B. Collections of Information Employing Statistical Methods

1. Describe the potential respondent universe and any sampling or other respondent selection methods to be used.

Most emergency epidemiologic investigations of outbreaks require interviews of all producers whose operations are affected by the condition in question. Investigators may, on occasion, interview a sample of affected operations and controls (non-affected operations). In some situations, State and local animal health officials may also be included in the respondent universe. When statistical methods are employed in the collection of information, expert statistical assistance is available within NAHMS relating to sampling methodology, selection of controls, design of questionnaires, and analysis of data.

2. Describe the procedures for the collection of information including:

Statistical methodology for stratification and sample selection:

Generally, there could be two data collection phases:

- The initial descriptive phase which involves attempting to survey every producer experiencing the outbreak which may include State animal health officials; and
- The analytical epidemiology phase (or risk factor analysis) where affected producers' operations may be matched with controls of non-affected operations. Controls are normally selected by geographic area. The typical ratios used in these case control studies would range from one-to-one to three-to-one controls to cases, depending on the disease situation. Case and control operations will be selected from the population of operations in a particular geographic area. Data on the number of affected operations and the severity of the problem on each operation will be collected via questionnaire. Ratio of controls to cases may be anywhere from one-to-one (for high prevalence diseases) to three-to-one (for low prevalence diseases). A sampling protocol will be provided with specific details as they become available.

In many cases, there is no sample selection in epidemiologic investigations. Data are collected by self-administered questionnaire or personal interview. Procedures for each investigation depend on the time and resources available, number of premises/animals involved, and other unique circumstances to the emergency at hand.

1. Estimation procedures:

Estimation procedures are not used.

2. Degree of accuracy needed:

NAHMS will select a sample size necessary to be able to estimate an odds ratio of approximately two.

- **Unusual problems requiring specialized sampling procedures and data collection cycles:**

No specialized sampling procedures or data collection cycles are anticipated. However, because of the wide variety of potential disease events which may require an emergency epidemiologic investigation, it may become necessary to design a specialized sampling or collection procedure. NAHMS staff will work closely with OMB to design and evaluate any specialized sampling or data collection cycles if they become necessary.

3. Describe methods to maximize response rates and to deal with issues of non-responses:

Study Design:

- ☐ The investigations minimize collection of data to that which is absolutely necessary.
- ☐ Investigations are performed on issues where there is a pressing need for information within the industry.
- ☐ The commodity specialists within NAHMS have numerous contacts in various animal agriculture industries, and these contacts are used to determine the best way to ask for information via questionnaire.
- ☐ NAHMS works closely with industry to design and carry out epidemiologic investigations to ensure all studies address a pressing industry need.
- ☐ Non-respondents may be re-contacted to increase response rates.

Contacting Respondents:

- For both phases (descriptive and risk factor analysis), a single livestock owner or State or local animal health official will be the respondent. Respondents may be contacted directly by an APHIS-designated data collector via email, mail questionnaire, telephone, or farm visit depending on the situation.

Data Collection Steps:

- ☐ Many epidemiologic investigations include no-cost testing to increase response rates and capture needed information.
- ☐ Many questions have been used successfully in previous NAHMS studies. A subset of these questions will be used. Occasionally, new questions will be developed for specific circumstances surrounding an outbreak.
- ☐ Respondents may complete the questionnaires online, with assistance from a data collector, or via hard copy.

Data Analysis Steps:

The response rate for the questionnaires, given the methods described above, will vary depending on the disease situation. NAHMS expects that about 70 percent of producers will typically agree to participate in epidemiologic investigations. If inferences are needed to the population of affected farms APHIS would need to generate descriptive statistics via appropriate weight adjustment procedures. If the respondents differ substantially from the nonrespondents, there will be the potential for bias. Since all producers in the inference population are to be included in the initial sample, unlike other NAHMS studies that use complex sampling design,

the initial weight will be one. However, to address potential bias due to substantial nonresponse, the weights of nonrespondents can be transferred to responding operations that are most similar based on available data. Within definable categories, the sum of weights of the nonrespondents and respondents will be divided by the sum of the weights of the respondents only. This factor will be used to adjust the weights of the respondents within the category. All weights for nonrespondents will be set to zero.

Risk factor analysis may or may not use weights. Usually the case control studies use an un-weighted approach for the identification of risk factors.

4. Describe any tests of procedures or methods to be undertaken.

Pilot tests of procedures for emergency outbreak investigations are rare because of the lack of time available before an investigation proceeds. However, for investigations which are similar, investigators may use forms or questions revised from previous emergency epidemiologic investigations or questions from previous NAHMS studies. If time permits, the questionnaire may be reviewed by a variety of experts including academic researchers, industry representatives, extension agents, veterinarians, health specialists, and epidemiologists.

1. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and /or analyze the information for the agency.

The statistical aspects of the design will be coordinated by Ms. Christine Kopral, Statistician, USDA: APHIS, Veterinary Services, CEAH, Fort Collins, CO, (970) 494-7325.

The contact person for data collection is:

- Dr. Jack Shere, Deputy Administrator, USDA: APHIS, Veterinary Services, Washington, DC (202) 447-6835.

Analysis of the data will be accomplished by NAHMS veterinarians, epidemiologists, and statisticians under the direction of:

- Dr. Amy Delgado, Director, Monitoring and Modeling, USDA: APHIS, VS, CEAH, 2150 Centre Avenue, Building B MS2E7, Fort Collins, CO 80526-8117 (970) 494-7256.

In most cases, investigators collecting information will be State, Federal, or local officials. All investigations are supervised by experienced epidemiologists with expert statistical resources available.