Guidelines for Developing an Animal Health Surveillance Plan
USDA – APHIS – VS – Centers for Epidemiology and Animal Health - National Surveillance Unit

These guidelines provide an overview of the key considerations in developing animal health surveillance plans and are intended to assist expert teams charged with developing an effective and efficient surveillance system. The guidelines identify issues and development steps that are relevant to almost all animal health surveillance plans and refer the reader to relevant standards and supporting information.

Surveillance planners may use these guidelines to:
- Outline the surveillance planning process and estimate a timeline
- Provide a checklist of items to include in a surveillance plan
- Identify tasks and create assignments
- Guide discussions on elements to include in a surveillance plan
- Format a surveillance plan
- Check the final content of a plan

This document complements the more extensive *Surveillance and Data Standards for USDA / APHIS / Veterinary Services.* As with the *Standards* document, this guide is not intended to be prescriptive or to define mandatory items for inclusion by surveillance architects, but instead to provide a useful tool to expedite surveillance planning.

Considerations for Developing a Surveillance Plan

Although animal health surveillance plans vary in objectives and scope, some considerations for the planning process are common to all surveillance planning efforts. These considerations should be addressed early in the process to help focus the working group on the purpose, scope, and background for the surveillance planning effort. These topics may or may not be specifically addressed in the surveillance plan document.

1. What is the purpose of the surveillance plan?

The purpose of the surveillance plan describes why a surveillance plan is needed, who has requested the surveillance plan, and how the plan will be used. The purpose of the plan is distinct from the purpose of the surveillance effort(s). The purpose of the surveillance plan provides helpful background information to the work group, especially when the group includes representatives from widely different areas of expertise or different levels of surveillance planning experience.

2. What is the scope of the plan?

The scope of the surveillance plan is intended to describe what the surveillance plan will and will not include and to provide guidance to the surveillance planning team so there is a shared understanding of what the final product will cover and the expected level of detail. In some cases, separate surveillance plans are developed to meet distinct objectives within a broader surveillance effort; in these instances, clarifying the scope of the current surveillance plan will help to focus the project.

3. Who is the audience for the plan?

The audience describes who will ultimately read and use the plan. Typically, surveillance plans are developed for a technical audience who will be directly or indirectly involved in the surveillance system or will use the results of the surveillance program for decision-making. Considerations may include the extent to which the surveillance plan will be shared with internal or external audiences, whether Legislative and Public Affairs clearance will be needed, and if there may be a need to develop separate documents for less technical or public audiences.

4. Who are the surveillance planning team members and what are their roles and responsibilities?

Development of the planning team requires consideration of the types of expertise needed for the particular surveillance plan; this may include expert knowledge of the disease or species under surveillance, surveillance planning, risk analysis, economic analysis, statistics, technical writing, and project management. Responsibilities of each team member should be specified so that there is a clear understanding of who will write each part of the plan and who will manage the overall plan development.

5. Background and Supporting Information

It is helpful to collect the background and supporting information that will be needed to develop the surveillance plan early in the planning process. This information may include:
- Disease information on transmission, survivability of agent, epidemiological features
- Regulations information, including OIE regulations
- Information on existing and historic surveillance activities, including plans, reports and results from those activities
- Risk assessment and pathways analysis results (particularly for FAD surveillance)
- Economic assessment results, economic impact information
- Studies, surveys, or censuses that provide critical baseline information for surveillance
- Documents that justify the need for surveillance plan
- Lists or descriptions of stakeholders who should be consulted in the surveillance planning process

Elements of a Surveillance Plan

A surveillance plan should consider all of the 'Key Components of a Surveillance System' that are described in the first chapter of the *Surveillance and Data Standards for USDA / APHIS / Veterinary Services*. These 15 standards focus on surveillance objectives, design, implementation, analysis, reporting, and evaluation. Some elements may be more or less important in some surveillance plans because of differences in the objectives or scope of particular systems, but each merits consideration in the planning process. Additional information and examples related to each element are described in the *Standards* document.

Introductory Information

1. Disease Description

The surveillance plan should include current and relevant supporting information about the disease under surveillance. [Standard 1.1]

2. Purpose and Rationale for Surveillance

The purpose and rationale for surveillance describes what the surveillance activities will achieve and why it is needed. The purpose is a description of the overall goal of the surveillance or what it aims to achieve. The rationale provides the information that justifies the need for the surveillance. The rationale may describe the impact of the disease on animal or human health and agricultural production and include summarized results from risk assessments and economic analysis. Supporting documents should be provided as appendices. [Standard 1.2]

3. Surveillance Objectives

The surveillance plan should describe the specific objectives of the proposed surveillance. Objectives should explain the steps that will be taken to achieve the overall goal or purpose of the surveillance. Objectives should be concise statements that describe the actions that will be undertaken to achieve the purpose of the surveillance; they should focus on specific results and be measurable. Objectives should also specify the primary ways that surveillance data will be used for decision-making. [Standard 1.3]

4. Expected Outcomes: Products, Decisions, and Actions

The plan should describe the specific outcomes (products, deliverables) that the surveillance will provide. This often includes a description of how the resulting surveillance information will be used for decision-making, policy development, and other actions as well as products such as databases and reports. Expected outcomes should be consistent with the surveillance objectives and form a logical focus for future evaluation efforts. [Standard 1.4]

5. Stakeholders and Responsible Parties

The surveillance plan should describe the users and beneficiaries of the surveillance information and the individuals and groups responsible for all aspects of the surveillance, including design, implementation, management and maintenance, data system design and maintenance, and information dissemination. The surveillance plan may also describe how responsible parties and stakeholders are kept informed, engaged, and trained (if applicable, e.g., training for data collectors). [Standard 1.5]

Population Description and Sampling Methods

6. Population Description and Characteristics

The population of animals under surveillance should be clearly defined in the surveillance plan. The population description inherently describes the scope of the surveillance (i.e., national, State, regional, or local). [Standard 1.6]

7. Case Definition

The surveillance plan should include information about the case definitions used in the surveillance system. Case definitions should be clear and include criteria for diagnosis, laboratory criteria for confirmation, any restriction or application of the case definition to specific geographical or demographic characteristics, and descriptions of case classification categories. [Standard 1.7]

8. Data Sources

The surveillance plan should clearly identify all of the data sources for surveillance, including specific details on what information will be collected from each source and who will be responsible for providing those data. When existing databases are anticipated to contribute information to the surveillance initiative, information should be gathered on what data is available, where it resides, and how it may be accessed. [Standard 1.8]

9. Sampling Methods

The sampling methods section of a surveillance plan should be comprehensive and address statistical and epidemiological concerns as well as describe the specific data collection methods [Standard 1.9]. Considerations for sampling methods include, but are not limited to:
- Geographic representation and appropriate level of sampling
- Sample size justification (mathematical and epidemiological justification)
- Methods of data collection for each data source
- Data collection triggers and frequency of data collection
- Sources of sampling bias and how sampling bias will be avoided
- Test sensitivity, specificity, and predictive values
- Data sensitivity and confidentiality issues
- Transmittal of field and laboratory data to program managers and coordinators

Analysis, Reporting and Presentation

10. Data Analysis and Interpretation

The methods and process for summarizing, analyzing, and interpreting data should be detailed in the surveillance plan [Standard 1.10]. Considerations include, but are not limited to:
- Scientific soundness of the proposed analysis and interpretation
- Alignment of proposed analysis and interpretation with the purpose, objectives, and expected outcomes for the surveillance system

- Descriptions of analytic methods should be understood by VS professionals, including decision-makers whose expertise is not in a mathematical or analytical field
- Appropriateness and ability to support the proposed data analysis and interpretation given the data type collected, data sources, and sampling methods
- Methods for dealing with inherent biases, confounders, missing records, and unequal sample sizes

11. Data Presentation and Reports

Data presentation and reporting procedures should be identified in the surveillance plan and specify the content, frequency, audiences, and methods of disseminating data and information obtained through the surveillance system [Standard 1.11]. Considerations include timeliness of communicating relevant information to stakeholders, reporting format and frequency for different audiences, and data confidentiality issues

Implementation, Budget, and Evaluation

12. Surveillance System Implementation: Priorities, Timelines, and Internal Communications

The surveillance plan should describe the priorities of the surveillance system, a timeline for implementing various aspects of the system, and the roles and responsibilities associated with system implementation. The timeline for implementation should be consistent with the priorities for the system, and these priorities should be agreed upon by affected responsible parties. The pathways for internal communications should also be addressed in the surveillance plan. [Standard 1.12]

13. Resources

The human, financial, and other resources that are required to design, implement, and maintain the surveillance system must be considered in the planning process [Standard 1.13]. This topic may be addressed in a surveillance plan, in a separate budget document, or both.

14. Surveillance Plan Performance Metrics

The surveillance plan should include one or more objective measures of the system's performance that can be used for system evaluation. These performance metrics should be consistent with the objectives and expected outcomes for the surveillance system and, ideally, provide a quantifiable measure of the extent to which expected outcomes are achieved. [Standard 1.14]

15. Surveillance System Evaluation

The surveillance plan should address how and when the surveillance system will be evaluated to determine how well the system fulfills its stated objectives and meets accepted standards. [Standard 1.15]

Standards for Data Collection, Storage, and Quality Control

Surveillance planning should include planning for the development of databases and information technology (IT) systems. The second and third chapters of the *Surveillance and Data Standards for USDA / APHIS / Veterinary Services* provide general guidelines for database development, maintenance, security, data quality control, and related IT issues. Because most of the activity associated with database and IT development is typically conducted after a surveillance plan has been finalized and is moving toward implementation, the standards associated with database and IT aspects of a surveillance system may not be documented in a surveillance plan. Rather, these issues may be addressed in the requirements or documents for the IT systems.