

'Toolbox' helps responders plan disease outbreak surveillance

By Tom Kasari, National Surveillance Unit

Responding to an outbreak of a foreign or domestic animal disease can be stressful for all participants engaged in activities – beginning with the initial point of control and ending with the eradication of the disease. In response to Veterinary Services, industry and the National Animal Health Surveillance System Steering Committee's recognition of the need for standardized, efficient methodology for surveillance planning in an outbreak, the National Surveillance Unit (NSU) is developing a "toolbox" for disease outbreaks focused on surveillance. The toolbox reflects an effort to standardize the surveillance planning associated with a disease outbreak. It also provides the resources that a first-responder epidemiologist needs to design a sustainable surveillance strategy that fits the individual conditions and environment of any given disease outbreak.

A State or Federal veterinary epidemiologist is one of the first responders on site with the responsibility of assessing the disease situation and surveillance strategies needed to get the disease outbreak under control. This plan of action is documented in the form of a written surveillance plan. A surveillance plan often must be assembled literally within hours of arriving on the scene. The outbreak response toolbox houses the needed resources or tools in one place in an electronic format to facilitate rapid development of a surveillance plan to tackle the disease. Private veterinary practitioners may also find the toolbox material helpful when faced with conducting their own disease investigations at an individual herd level.

Currently, the contents of the toolbox provide information and resources on animal control zones, case definitions, a sampling plan, and MS Word[®] document templates, all of which may be used to aid the veterinary epidemiologist in developing a surveillance plan.

For example, in the sampling plan section of the toolbox, two Excel[®]-based electronic spreadsheets have been developed to enable veterinary epidemiologists to determine and communicate to field personnel the appropriate number of animals to be sampled in each control zone and premises. One spreadsheet automatically estimates the number of animals to sample, given values provided by the epidemiologist for the expected prevalence of disease within the herd or flock to be sampled, the sensitivity of the test being used, and the level of confidence (e.g., 95 percent,) that infected individuals will be found in the sample if the disease

is present at the expected prevalence in the sampled population. The other electronic spreadsheet facilitates determining the likely prevalence of disease within the herd or flock at selected times after the initial exposure to the infectious agent. Links to these electronic decision aids are embedded in the sampling plan section of the document. Other products to be included in the toolbox will be templates for a daily situation report and an epidemiology report which, in the aftermath of the disease, will facilitate summarization of all epidemiological information and response activities.

Other sections of the toolbox will be added as development continues, including an extensive collection of supporting documents. Users will be able to access the toolbox via CD-ROM or online. Recognizing that content must be kept current, regular updates will be made to the “tools” (resources) in the toolbox.

Success in containing a rapidly developing and often catastrophic infectious disease outbreak depends greatly on how well the response professionals are trained and equipped. Each veterinary epidemiologist brings a substantial, yet variable, amount of knowledge and expertise to the forefront of an outbreak; however, in time-pressing situations the epidemiologist needs readily accessible information—calculating spreadsheets, templates, models, and reference materials to help ensure success. The surveillance toolbox project is intended to provide the professionals with all these necessary elements to quickly develop a consistent, complete, and sustainably effective surveillance plan to reduce the size and costs of an outbreak.

Other NSU collaborators on the toolbox project include Aaron Scott, Sarah Tomlinson, Stan Bruntz, Alex Thompson, and Chad Zadina.